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RULES AND REGULATIONS
FOR
TANK VESSELS

CG-123

February 1, 1954

ALL THE REGULATIONS CONTAINED IN THIS
PAMPHLET HAVE BEEN PUBLISHED IN THE
FEDERAL REGISTER AS REQUIRED BY LAW

UNITED STATES COAST GUARD
TREASURY DEPARTMENT

RULES AND REGULATIONS
FOR
TANK VESSELS

(Title 46, C. F. R., Parts 30 to 39, Inclusive)

CG–123

February 1, 1954

UNITED STATES COAST GUARD

TREASURY DEPARTMENT

UNITED STATES
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UNITED STATES COAST GUARD

ADDRESS REPLY TO:
COMMANDANT
U. S. COAST GUARD
HEADQUARTERS
WASHINGTON 25, D. C.

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February 1, 1954

FOREWORD

The "Rules and Regulations for Tank Vessels," CG–123, are applicable to all vessels regardless of tonnage or size, whether self-propelled or not, and whether carrying freight or passengers for hire or not, that have on board any inflammable or combustible liquid cargo in bulk. These rules and regulations do not apply to vessels carrying on board inflammable or combustible liquids for use as fuel or stores on such vessels, nor to vessels carrying liquid cargo in drums, barrels, or other packages only. Neither do these rules and regulations apply to public vessels owned by the United States unless engaged in commercial services. A more specific statement of application is set forth in section 30.01–5 in this pamphlet.

The rules and regulations in this pamphlet are copied from Subchapter D (Tank Vessels) of Chapter I, Title 46 (Shipping) of the Code of Federal Regulations and contain the requirements in effect on February 1, 1954. This publication replaces the "Tank Vessel Regulations" dated November 19, 1952, and includes all amendments published in the Federal Register through February 1, 1954.

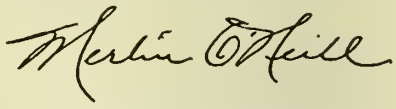
The rules and regulations covering boilers, pressure vessels, and appurtenances (which include castings, piping, valves, mountings, fittings, etc., and the design, construction, installation, and inspection thereof) are contained in separate publications entitled "Marine Engineering Regulations and Material Specifications," and "Marine Engineering Installations Contracted for Prior to July 1, 1935." The rules and regulations regarding load lines are contained in a separate pamphlet entitled "Load Line Regulations." The rules and regulations governing passenger vessels are contained in a separate publication entitled "Rules and Regulations for Passenger Vessels." The rules and regulations governing cargo and miscellaneous vessels are contained in a separate publication entitled "Rules and Regulations for Cargo and Miscellaneous Vessels."

All the rules and regulations regarding vessel inspection are published in Chapter I of Title 46 (Shipping) in the Code of Federal Regulations. These rules and regulations are further divided into subchapters, parts, subparts, sections, paragraphs, subparagraphs, and subdivisions. The subchapters are given alphabetical designations and the regulations in this pamphlet are copied from Subchapter D (Tank Vessels) in Chapter I. The parts are numbered from 30 to 39 inclusive. The subparts are designated by numbers which include the number of the part set off by decimal point. The subparts are further divided into sections which are indicated by the subpart number plus a dash and an arabic number. The sections have been further subdivided into paragraphs, paragraphs into subparagraphs, and subparagraphs into subdivisions. The terminology for numbering may be described as follows:

Terminology	*Example*
Part	30
Subpart	30.01
Section	30.01–1
Paragraph	30.01–1 (a)
Subparagraph	30.01–1 (a) (1)
Subdivision	30.01–1 (a) (1) (i)

General authority over and responsibility for the administration and enforcement of the laws, rules, and regulations relating to merchant tank vessels in the various Coast Guard districts are vested in and imposed upon the Coast Guard District Commanders in charge of such districts. The Officer in Charge, Marine Inspection, has been designated for the purpose of giving immediate direction to the Coast Guard activities relating to merchant tank vessels within the general proximity of the ports in which he is situated under the general supervision of a Coast Guard District Commander.

Shipowners, operators, builders, vessels' operating forces, and other persons affected by the navigation and vessel inspection laws, rules, and regulations should familiarize themselves with the requirements contained in this publication. To this end, Coast Guard personnel concerned with the administration and enforcement of these laws, rules, and regulations will extend every possible assistance.



MERLIN O'NEILL
Vice Admiral, U. S. Coast Guard
Commandant

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CONTROL SHEET FOR CHANGES

Federal Register date	Section number	Subject

CONTROL SHEET FOR CHANGES

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PART 30—GENERAL PROVISIONS

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30.20–1 Enforcement—TB/ALL.
30.20–10 Penalties for violations of tank vessel regulations—TB/ALL.
30.20–50 Right of appeal—TB/ALL.

AUTHORITY: Sections 30.01–1 to 30.20–50, inclusive, issued under R. S. 4405 and 4417a, as amended, and Section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 391a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 30.01—ADMINISTRATION

Section 30.01–1 Basis and purpose of regulations—TB/ALL. By virtue of authority vested in the Commandant of the Coast Guard by Treasury Department Order No. 120, dated July 31, 1950 (15 F. R. 6521), and in accordance with R. S. 4405 and 4417a, as amended, and § 5 (e) of the act of June 6, 1941 (46 U. S. C. 375, 391a, 50 U. S. C. 1275), the rules and regulations in this subchapter are prescribed for all tank vessels in accordance with the intent of the various statutes and to obtain their correct and uniform administration.

30.01–5 Application of regulations—TB/ALL. (a) The regulations in this subchapter contain requirements for materials, design, construction, inspection, manning, and operation of tank vessels, including handling and stowage of cargo and duties of officers and crew. However, vessels certificated as cargo or passenger vessels, where the principal purpose or use of vessel is not for the carriage of inflammable or combustible liquid cargo in bulk, may be granted a permit to carry Grade E liquid cargo in bulk in the case of passenger vessels and Grade D or E liquid cargo in bulk in the case of cargo vessels.

(b) The requirements of this subchapter are divided into parts as follows:

(1) Inspection and certification.

(2) Special equipment, machinery, and hull requirements.

(3) Lifesaving appliances.

(4) Fire-fighting equipment.

(5) Operations.

[1] The regulations in this pamphlet are copied from the Code of Federal Regulations of the United States of America, as amended, Title 46, Chapter I.

(6) Liquefied petroleum gases.

(7) Combustible or inflammable liquids with lethal qualities.

(c) The vessels and services to which each regulation applies are indicated by letters in the heading of the section or paragraph. The first letter or two letters indicate the type of vessel and the letter or letters following the oblique line indicate the waters in which such vessels may operate. These letters are described as follows:

(1) "T" signifies a tank ship.

(2) "B" signifies a tank barge when it precedes an oblique line; or it signifies service on bays, sounds, and lakes other than the Great Lakes when it follows an oblique line.

(3) "ALL" signifies service on all waters.

(4) "O" signifies service on ocean waters.

(5) "C" signifies services on coastwise waters.

(6) "L" signifies service on Great Lakes' waters.

(7) "R" signifies service on river waters.

(d) This subchapter shall be applicable to all United States flag vessels indicated in Column 3 of Table 30.01–5 (d), except as follows:

(1) Any vessel operating exclusively on inland waters which are not navigable waters of the United States.

(2) Any vessel while laid up and dismantled and out of commission.

(3) With the exception of vessels of the U. S. Maritime Administration, any vessel with title vested in the United States and which is used for public purposes.

(e) This subchapter shall be applicable to all foreign flag vessels indicated in Column 3 of Table 30.01–5 (d) while in the navigable waters of the United States insofar as meeting the general intent of the safety and cargo handling requirements set forth in Subparts 35.30 and 35.35 of this subchapter. Further, such vessels that carry 12 or less passengers from any port of the United States shall be subject to the provisions of this subchapter to the extent prescribed by law except as follows:

(1) Any vessel of a foreign nation signatory to the International Convention on Safety of Life at Sea, 1948, and which has on board a current, valid Safety Equipment Certificate.

(2) Any vessel of a foreign nation having inspection laws approximating those of the United States together with reciprocal inspection arrangements with the United States, and which has on board a current, valid certificate of inspection issued by its government under such arrangements.

TABLE 30.01–5 (d)

Method of propulsion	Size or other limitations	Classes of vessels (including motorboats) examined or inspected under various Coast Guard regulations			
		Vessels inspected and certificated under Subchapter D—Tank Vessels [1]	Vessels inspected and certificated under Subchapter H—Passenger Vessels [1 2]	Vessels inspected and certificated under Subchapter I—Cargo and Miscellaneous Vessels [1 2]	Vessels subject to provisions of Subchapter C—Uninspected Vessels [1 2 3]
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Steam	Vessels 40 feet in length and under.[4]	All vessels carrying combustible or inflammable liquid cargo in bulk.	None	All tugboats and towboats.	All vessels except those covered by Subchapters D and I.
	Vessels over 40 but not over 65 feet in length.[4]	All vessels carrying combustible or inflammable liquid cargo in bulk.	None	All tugboats and towboats.	All vessels except those covered by Subchapters D and I.[5]
	Vessels over 65 feet in length.[4]	All vessels carrying combustible or inflammable liquid cargo in bulk.[6]	All vessels carrying more than 12 passengers on an international voyage except yachts, and all other vessels carrying passengers except: 1. Yachts. 2. Documented cargo vessels issued a permit to carry not more than 16 persons in addition to the crew. 3. Towing and fishing vessels, in other than ocean and coastwise service, issued a permit to carry persons on the legitimate business of the vessel, in addition to the crew, but not to exceed one for each net ton of the vessel.	All vessels except those covered by Subchapters D and H.	None.
Motor	Vessels of not over 15 gross tons.	All vessels carrying combustible or inflammable liquid cargo in bulk.	None	None	All vessels except those covered by Subchapter D.
	Vessels over 15 gross tons except seagoing motor vessels of 300 gross tons and over.	All vessels carrying combustible or inflammable liquid cargo in bulk.[6]	All vessels carrying more than 12 passengers on an international voyage, except yachts, and all other vessels carrying passengers for hire except documented cargo vessels over 65 feet in length issued a permit to carry not more than 16 persons in addition to the crew.	All vessels carrying freight for hire except those covered by Subchapters D and H.	All vessels except those covered by Subchapters D, H, and I.
	Seagoing motor vessels of 300 gross tons and over.	All vessels carrying combustible or inflammable liquid cargo in bulk.[6]	All vessels carrying more than 12 passengers on an international voyage except yacbts, and all other vessels carrying passengers except: 1. Yachts. 2. Documented cargo vessels issued a permit to carry not more than 16 persons in addition to the crew.	All vessels except those covered by Subchapters D and H, and those engaged in the fishing, oystering, clamming, crabbing, or any other branch of the fishery, kelp, or sponge industry.	All vessels except those covered by Subchapters D, H, and I.
Sail		All vessels carrying combustible or inflammable liquid cargo in bulk.	All vessels over 700 gross tons carrying passengers for hire.	None	None.
Non-self-propelled.	Seagoing barges	All barges carrying combustible or inflammable liquid cargo in bulk.	All barges 100 gross tons and over carrying passengers.	All barges 100 gross tons and over except those covered by Subchapters D and H.	All barges carrying passengers except those covered by Subchapter H.
	Inland barges	All barges carrying combustible or inflammable liquid cargo in bulk.	All barges over 100 gross tons carrying passengers for hire.	None	All barges carrying passengers except those covered by Subchapter H.

[1] Subchapters E (Load Lines), F (Marine Engineering), and J (Electrical Engineering) of this chapter are also applicable under certain conditions.

[2] Public nautical school ships, other than vessels of the Navy and Coast Guard, shall meet the requirements of Part 167 of Subchapter R (Nautical Schools) of this chapter. Civilian nautical school ships, as defined by 46 U. S. C. 1331, shall meet the requirements of Subchapter H (Passenger Vessels) and Part 168 of Subchapter R (Nautical Schools) of this chapter.

[3] Any vessel on an international voyage subject to the requirements of the International Convention for the Safety of Life at Sea, 1948.

[4] Length measured from end to end over deck, excluding sheer.

[5] Boilers and machinery are subject to examination.

[6] Vessels covered by Subchapter H (Passenger Vessels) or I (Cargo and Miscellaneous Vessels) of this chapter, where the principal purpose or use of the vessel is not for the carriage of liquid cargo, may be granted a permit to carry a limited amount of combustible liquid cargo in bulk. The portion of the vessel used for the carriage of the combustible liquid cargo shall meet the requirements of Subchapter D (Tank Vessels) in addition to the requirements of Subchapter H (Passenger Vessels) or I (Cargo and Miscellaneous Vessels) of this chapter.

30.01–10 Application of regulations governing alterations or repairs—TB/ALL. When major alterations or major repairs of tank vessels become necessary the work shall be done under the direction of the Officer in Charge, Marine Inspection, and shall be in accordance with the regulations in effect for new construction insofar as possible. When minor alterations or minor repairs of tank vessels become necessary, such work shall be under the direction of the Officer in Charge, Marine Inspection, and shall be in accordance with the regulations in effect at the time the vessel was contracted for or built, or in accordance with the regulations in effect for new construction insofar as possible.

30.01–15 Effective date of regulations—TB/ALL. (a) The regulations in this subchapter are effective on and after November 10, 1936: *Provided*, That amendments, revisions, or additions shall become effective ninety (90) days after the date of publication in the Federal Register unless the Commandant shall fix a different time.

(b) The regulations in this subchapter are not retroactive in effect unless specifically made so at the time the regulations are issued. Changes in specification requirements of articles of equipment, or materials used in construction of tank vessels, shall not apply to such items which have been passed as satisfactory until replacement shall become necessary, unless a specific finding is made that such equipment or material used is unsafe or hazardous and has to be removed from tank vessels.

SUBPART 30.10—DEFINITIONS

30.10–1 Definition of terms—TB/ALL. Certain terms used in the regulations in this subchapter are defined in this subpart.

30.10–3 Approved—TB/ALL. The term "approved" means approved by the Commandant unless otherwise stated.

30.10–5 Cargo—TB/ALL. The term "cargo" means combustible liquid, inflammable liquid, or liquefied inflammable gas unless otherwise stated.

30.10–7 Certificated—TB/ALL. The term "certificated" when applied to tank vessels refers to a vessel covered by a certificate of inspection issued by the Coast Guard; when applied to men employed on tank vessels, the term refers to a certificate of ability issued by the Coast Guard.

30.10–9 Classification requirements — TB/ALL. The term "classification requirements" means applicable rules and supplementary requirements of the American Bureau of Shipping, or other recognized classification society.

30.10–11 Coastwise—TB/C. Under this designation shall be included all tank vessels normally navigating the waters of any ocean or the Gulf of Mexico 20 nautical miles or less offshore.

30.10–13 Cofferdam — TB/ALL. The term "cofferdam" means a void or empty space separating two or more compartments for the purpose of isolation or to prevent the contents of one compartment from entering another in the event of the failure of the walls of one to retain their tightness.

30.10–15 Combustible liquid—TB/ALL. The term "combustible liquid" means any liquid having a flash point above 80° F. (as determined from an open-cup tester, as used for test of burning oils). Combustible liquids having lethal qualities are those having the characteristics of class "B" or "C" poisons as defined in §§ 146.25–3 and 146.25–5 of Subchapter N, Explosives or Other Dangerous Articles On Board Vessels, of this chapter. In the regulations of this subchapter, combustible liquids are referred to by grades, as follows:

(a) Grade D. Any combustible liquid having a flash point below 150° F. and above 80° F.

(b) Grade E. Any combustible liquid having a flash point of 150° F. or above.

30.10–17 Commandant—TB/ALL. The term "Commandant" means the Commandant of the Coast Guard.

30.10–19 Coast Guard District Commander—TB/ALL. The term "Coast Guard District Commander" means an officer of the Coast Guard designated as such by the Commandant to command all Coast Guard activities within his district which include the enforcement and administration of Title 52, R. S., acts amendatory thereof or supplemental thereto, rules and regulations thereunder and the inspections required thereby.

30.10–23 Flame arrester—TB/ALL. The term "flame arrester" means any device or assembly of a cellular, tubular, pressure, or other type used for preventing the passage of flames into enclosed spaces.

30.10-25 Flame screen—TB/ALL. The term "flame screen" means a single screen of corrosion-resistant wire of at least 30 by 30 mesh, or two screens, both of corrosion-resistant wire, of at least 20 by 20 mesh, spaced not less than ½ inch or more than 1½ inches apart.

30.10-27 Flash point—TB/ALL. The term "flash point" indicates the temperature in degrees Fahrenheit at which a liquid gives off an inflammable vapor when heated in an open-cup tester. For the purpose of the regulations in this subchapter, flash points determined by other testing methods will be equivalent to those determined with an open-cup tester, as follows:

TABLE 30.10-27—EQUIVALENT FLASH POINTS

Open-cup tester	Tag closed-cup tester (A. S. T. M.)	Pensky-Martens closed tester (A. S. T. M.)
° F.	° F.	° F.
80	75	----------
150	----------	140

30.10-29 Gas free—TB/ALL. The term "gas free" means free from dangerous concentrations of inflammable or toxic gases.

30.10-31 General rules and regulations—TB/ALL. The term "general rules and regulations" means the requirements contained in this chapter.

30.10-33 Great Lakes—TB/L. Under this designation shall be included all tank vessels navigating the Great Lakes.

30.10-35 Headquarters — TB/ALL. The term "Headquarters" means the Office of the Commandant, U. S. Coast Guard, Washington, D. C.

30.10-37 Inflammable liquid — TB/ALL. The term "inflammable liquid" means any liquid which gives off inflammable vapors (as determined by flash point from an open-cup tester, as used for test of burning oils) at or below a temperature of 80° F. Inflammable liquids having lethal qualities are those having the characteristics of class "B" or "C" poisons as defined in §§ 146.25-3 and 146.25-5, of Subchapter N, Explosives or Other Dangerous Articles On Board Vessels, of this chapter. Inflammable liquids are referred to by grades as follows:

(a) Grade A. Any inflammable liquid having a Reid[1] vapor pressure of 14 pounds or more.

(b) Grade B. Any inflammable liquid having a Reid vapor pressure under 14 pounds and over 8½ pounds.

(c) Grade C. Any inflammable liquid having a Reid vapor pressure of 8½ pounds or less and a flash point of 80° F. or below.

30.10-39 Liquefied inflammable gas—TB/ALL. The term "liquefied inflammable gas" means any inflammable gas having a Reid[1] vapor pressure exceeding 40 pounds, which has been compressed and liquefied for purposes of transportation. In this subchapter, liquefied inflammable gases are referred to by classes as follows:

(a) Class 1. Any liquefied petroleum gas, including gases or mixtures of gases produced with or derived from petroleum or natural gas, and composed predominantly of hydrocarbons or mixtures of hydrocarbons such as propane, propylene, butane, butylene, or butadiene.

(b) Class 2. Any liquefied inflammable gas other than liquefied petroleum gas.

30.10-41 Lakes, bays, and sounds—TB/B. Under this designation shall be included all tank vessels navigating the waters of any of the lakes, bays, or sounds other than the waters of the Great Lakes.

30.10-43 Marine inspector or inspector—TB/ALL. The terms "marine inspector" or "inspector" mean any person from the civilian or military branch of the Coast Guard assigned under the superintendence and direction of an Officer in Charge, Marine Inspection, or any other person as may be designated for the performance of duties with respect to the enforcement and administration of Title 52, R. S., acts amendatory thereof or supplemental thereto, rules and regulations thereunder, and the inspections required thereby.

30.10-45 Ocean—TB/O. Under this designation shall be included all tank vessels normally navigating the waters of any ocean or the Gulf of Mexico more than 20 nautical miles offshore.

30.10-47 Officer in Charge, Marine Inspection—TB/ALL. The term "Officer in Charge, Marine Inspection," means any person from the civilian or military branch of the Coast Guard

[1] American Society for Testing Materials Standard D-323 (most recent revision), Method of Test for Vapor Pressure of Petroleum Products (Reid Method).

designated as such by the Commandant and who under the superintendence and direction of the Coast Guard District Commander is in charge of an inspection zone for the performance of duties with respect to the enforcement and administration of Title 52, R. S., acts amendatory thereof or supplemental thereto, rules and regulations thereunder and the inspections required thereby.

30.10–49 Permit—TB/ALL. The term "permit" refers to endorsement on the certificate of inspection, authorizing the presence on board of liquid inflammable or combustible cargoes in bulk, issued by an Officer in Charge, Marine Inspection, for a tank vessel which is found to be in substantial compliance with the regulations in this subchapter.

30.10–53 Pilot Rules—TB/ALL. The term "Pilot Rules" means the regulations contained in Parts 80 to 100, inclusive, in Chapter I, Title 33, Code of Federal Regulations. These Pilot Rules are also published by the Coast Guard in three pamphlets according to the waters on which applicable; namely,

(a) Rules to Prevent Collisions of Vessels and Pilot Rules for Certain Inland Waters of the Atlantic and Pacific Coasts and of the Coast of the Gulf of Mexico;

(b) Pilot Rules for the Great Lakes and Their Connecting and Tributary Waters and the St. Marys River; and,

(c) Pilot Rules for the Western Rivers and the Red River of the North.

30.10–55 Pressure vacuum relief valve—TB/ALL. The term "pressure vacuum relief valve" means any device or assembly of a mechanical, liquid, weight, or other type used for the automatic regulation of pressure or vacuum in enclosed places.

30.10–57 Recognized classification society—TB/ALL. The term "recognized classification society" means the American Bureau of Shipping or other classification society recognized by the Commandant.

30.10–59 Reid vapor pressure — TB/ALL. The term "Reid vapor pressure" means the vapor pressure of a liquid at a temperature of 100° F. expressed in pounds per square inch absolute, as determined by the "Reid Method" as described in the American Society for Testing Materials, Standard D–323 (most recent revision), Method of Test for Vapor Pressure of Petroleum Products. This Standard is available at Headquarters for reference purposes or it may be purchased from the Society in Philadelphia, Pa.

30.10–61 Rivers—TB/R. Under this designation shall be included all tank vessels whose navigation is restricted to rivers and/or to canals, exclusively.

30.10–63 Spark arrester—TB/ALL. The term "spark arrester" means any device, assembly, or method of a mechanical, centrifugal, cooling, or other type and of a size suitable for the retention or quenching of sparks in exhaust pipes from internal combustion engines.

30.10–65 Tank barge—B/ALL. The term "tank barge" means any tank vessel not equipped with means of self-propulsion.

30.10–67 Tank ship—T/ALL. The term "tank ship" means any tank vessel propelled by power or sail.

30.10–69 Tank vessel—TB/ALL. The term "tank vessel" means any vessel especially constructed or converted to carry liquid bulk cargo in tanks.

30.10–71 Tankerman—TB/ALL. The term "tankerman" means any person holding a certificate issued by the Coast Guard attesting to his competency in the handling of inflammable or combustible liquid cargo in bulk or is any person holding a valid license as master, mate, pilot, or engineer.

SUBPART 30.20—ENFORCEMENT AND RIGHTS OF APPEAL

30.20–1 Enforcement—TB/ALL. The Officer in Charge, Marine Inspection, under the superintendence of the Coast Guard District Commander, is responsible for the performance of duties within his jurisdiction with respect to the enforcement and administration of Title 52, R. S., acts amendatory thereof or supplemental thereto, rules and regulations thereunder, and the inspections required thereby.

30.20–10 Penalties for violations of tank vessel regulations—TB/ALL. (a) The provisions

of R. S. 4417a, as amended (46 U. S. C. 391a) provide the following penalty:

(7) The owner, master, or person in charge of any vessel subject to the provisions in this section, or any or all of them, who shall violate the provisions of this section, or of the rules and regulations established hereunder, shall be subject to a fine of not more than $1,000 or imprisonment for not more than one year, or both such fine and penalty.

(b) Certificates of inspection for tank vessels may also be revoked or suspended by the Coast Guard where such process is authorized by law. This may occur if the vessel does not meet the requirements of law or regulations in this chapter or if there is a failure to maintain the safety requirements requisite to the issuance of a certificate of inspection.

30.20–50 Right of appeal—TB/ALL. Whenever any person directly interested in or affected by any decision or action of any Officer in Charge, Marine Inspection, shall feel aggrieved by such decision or action, he may appeal therefrom to the Coast Guard District Commander having jurisdiction and a like appeal shall be allowed from any decision or action of the Coast Guard District Commander to the Commandant, whose decision shall be final: *Provided*, *however*, That application for such reexamination of the case by a Coast Guard District Commander or by the Commandant shall be made within 30 days after the decision or action appealed from shall have been rendered or taken.

PART 31—INSPECTION AND CERTIFICATION

SUBPART 31.01—GENERAL

Sec.

31.01-1 Inspections required—TB/ALL.
31.01-10 Authority of marine inspectors—TB/ALL.
31.01-15 Application for annual inspection—TB/ALL.
31.01-20 Application for inspection of new tank vessel or conversion of a vessel to a tank vessel—TB/ALL.

SUBPART 31.05—CERTIFICATES OF INSPECTION

31.05-1 Issuance of certificate of inspection—TB/ALL.
31.05-5 Posting the certificate of inspection—TB/ALL.
31.05-10 Period covered by certificate of inspection—TB/ALL.

SUBPART 31.10—INSPECTIONS

31.10-1 Recognized classification society—TB/ALL.
31.10-5 Inspection of new tank vessels—TB/ALL.
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31.10-15 Annual inspection—TB/ALL.
31.10-20 Drydocking or hauling out—TB/ALL.
31.10-23 Examination of tail shaft—T/OC.
31.10-25 Inspection covering repairs and alterations involving safety—TB/ALL.
31.10-30 Stability test—TB/ALL.
31.10-31 Stability tests—T/OC.
31.10-35 Permit to proceed to other ports for repairs—TB/ALL.
31.10-40 Inspection during trial trip—T/ALL.
31.10-45 Inspection of crew accommodations—TB/ALL.

SUBPART 31.15—MANNING OF TANK VESSELS

31.15-1 Licensed officers and crews—TB/ALL.
31.15-5 Tank barges—B/ALL.
31.15-10 Towing vessels may carry persons in addition to crew—B/LBR.

SUBPART 31.20—WATERS OPERATED OVER

31.20-1 Waters—TB/ALL.

SUBPART 31.25—LOAD LINES

31.25-1 Load lines required—TB/OCL.

SUBPART 31.30—MARINE ENGINEERING

31.30-1 Marine engineering regulations and material specifications—TB/ALL.

AUTHORITY: Sections 31.01-1 to 31.30-1, inclusive, issued under R. S. 4405 and 4417a, as amended, and Section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 391a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 31.01—GENERAL

Section 31.01-1 Inspections required—TB/ALL. (a) Every tank vessel subject to the regulations in this subchapter shall be inspected annually, or oftener if necessary, by the Coast Guard to see that the hull, boilers, machinery, equipment, apparatus for storage, and appliances of the vessel comply with the marine inspection laws and the regulations in this subchapter and Subchapter E (Load Lines), Subchapter F (Marine Engineering), and Subchapter Q (Specifications) of this chapter, where applicable.

(b) In the inspection of hulls of tank vessels, the marine inspector will carefully inspect every accessible part of the hull and will examine the wood or metal of which the hull is constructed to determine its condition, making all necessary hammer tests of hulls constructed of iron or steel. If the marine inspector shall not have satisfactory evidence of the soundness of the hull of a wooden tank vessel, the Officer in Charge, Marine Inspection, shall not issue a certificate of inspection until such hull has been bored or opened up to the inspector's satisfaction.

(c) Tank vessels while laid up and dismantled and out of commission are exempt from any or all inspections required by law or regulations in this subchapter.

31.01-10 Authority of marine inspectors—TB/ALL. Inspectors may at any time lawfully inspect any tank vessel.

31.01-15 Application for annual inspection—TB/ALL. Application in writing for the annual inspection of every tank vessel required to be inspected by law and the regulations in this subchapter shall be made by the master, owner, or agent to the Officer in Charge, Marine Inspection, at any local marine inspection office, U. S. Coast Guard, where the vessel may be operating. The application should be on Form CG 833, Application for Inspection of Vessel, which requires information on name and type of vessel, nature of employment and route in which to be operated, grade or type of cargo to be carried, place where and date when the vessel may be inspected, and that no other application has been made to any

Officer in Charge, Marine Inspection, since the issuance of the last valid certificate of inspection.

31.01-20 Application for inspection of new tank vessel or conversion of a vessel to a tank vessel—TB/ALL. Prior to the commencement of the construction of any new tank vessel, or prior to the commencement of the conversion of any vessel to a tank vessel, application for the approval of contract plans and specifications and for a certificate of inspection shall be made in writing to the Coast Guard and no such construction or conversion shall be proceeded with until such approval is granted. (See § 31.10-1.)

SUBPART 31.05—CERTIFICATES OF INSPECTION

31.05-1 Issuance of certificate of inspection—TB/ALL. (a) When a tank vessel is found to comply with law and the regulations in this subchapter, and Subchapter E (Load Lines), Subchapter F (Marine Engineering), and Subchapter Q (Specifications) of this chapter, a certificate of inspection shall be issued to it, or to its owners, by the Officer in Charge, Marine Inspection.

(b) Certificates of inspection for tank vessels shall be similar in form to certificates issued to other cargo vessels, and in addition to the manning requirements and waters over which they may be operated, they shall be appropriately endorsed "Inspected and approved for the carriage of inflammable or combustible liquids of Grade A, B, C, D, or E" (as the case may be), and such endorsement shall serve as a permit for such vessel to operate. The endorsement for the carriage of liquefied inflammable gases is set forth in § 38.01-5 of this subchapter. The endorsement for the carriage of Class "B" or "C" poisonous liquids is set forth in § 39.01-5 of this subchapter.

(c) The certificate of inspection shall be verified by the oath of the inspector signing it before the chief officer of the customs of the district or any other person competent by law to administer oaths.

(d) The certificate of inspection shall be delivered to the master or owner of the tank vessel to which it relates.

31.05-5 Posting the certificate of inspection—TB/ALL. The certificate of inspection shall be framed under glass and posted in a conspicuous part of the vessel, except that where it is not practicable to so expose the certificate of inspection it shall be carried in the vessel in such manner as authorized by the Officer in Charge, Marine Inspection.

31.05-10 Period covered by certificate of inspection—TB/ALL. Certificates of inspection for any period less than 1 year shall not be issued.

SUBPART 31.10—INSPECTIONS

31.10-1 Recognized classification society—TB/ALL. (a) In the inspection of hulls, boilers, and machinery, the current standards established by the American Bureau of Shipping and designated "Rules for Building and Classing Steel Vessels" respecting material and construction of hulls, boilers, and machinery, except as otherwise provided for by law and regulations in this chapter, shall be accepted as standard by the Coast Guard after being adopted by the Commandant.

(b) The current standards established by the American Bureau of Shipping in effect at the time of construction of the vessel, or otherwise as applicable, shall be used. The book "Rules for Building and Classing Steel Vessels" is usually published annually and may be purchased from the American Bureau of Shipping, 45 Broad Street, New York 4, N. Y. These standards may be also examined at the office of the Commandant (M), U. S. Coast Guard, Washington, D. C., or at the office of any Coast Guard District Commander or Officer in Charge, Marine Inspection.

(c) The approved plans and certificate of the American Bureau of Shipping, or other recognized classification society for classed vessels, may be accepted by the Coast Guard as evidence of the structural efficiency of the hull and reliability of machinery of vessels subject to the regulations in this subchapter, except as otherwise provided for by laws and regulations in this chapter.

31.10-5 Inspection of new tank vessels—TB/ALL—(a) Plans. Triplicate copies of contract plans and specifications shall be forwarded to the Officer in Charge, Marine Inspection, in whose district the construction will take place, for submission to Headquarters for approval, but if the tank vessel is to be classed, such plans and specifications shall first be approved by a recognized classification society. If the plans and specifications are found to be in substantial agreement with the regulations in this chapter, they shall be approved,

properly stamped and dated and distributed as follows: one set to owner or builder; one set to Officer in Charge, Marine Inspection, of the district in which the vessel is to be built; and one set shall be retained at Headquarters. If such plans and specifications are not approved, Headquarters shall notify the owner or builder promptly wherein they fail to comply with the regulations in this chapter.

(b) Inspection. During construction, and upon completion of each tank vessel, it shall be inspected by the Officer in Charge, Marine Inspection, to determine whether it has been built in accordance with the approved plans and specifications, and, if so, a certificate of inspection endorsed as a permit for the carriage of inflammable or combustible liquids in bulk for the proper grade or grades of cargo shall be issued to the vessel or its owner.

(c) Certificate of class may be accepted. In the event such tank vessel is classed by the American Bureau of Shipping or other recognized classification society, the approved plans and certificates of such society may be accepted by the Coast Guard as evidence of the structural efficiency of the hull and reliability of machinery, except as otherwise provided for by law and the rules and regulations in this subchapter.

31.10–10 Vessels converted to tank vessels—TB/ALL. The procedure for the inspection of vessels converted to tank vessels shall conform to the inspection for new tank vessels as called for in § 31.10–5 (b), and such vessels shall comply with the requirements of inspections for converted vessels as set forth in the regulations in this subchapter.

31.10–15 Annual inspection—TB/ALL. (a) The Officer in Charge, Marine Inspection, shall once in every year, at least, carefully inspect each tank vessel within his jurisdiction and shall satisfy himself that every such vessel so inspected is of a structure suitable for the carriage of inflammable and/or combustible liquids in bulk and for the proper grade or grades of such cargo in the service in which she is employed; and if he deems it expedient, he may direct the vessel to be put in motion, and may adopt any other suitable means to test her sufficiency and that of her equipment.

(b) If such inspection reveals deficiencies in the maintenance as called for by the regulations in this subchapter, such necessary repairs or improvements shall be made as may be ordered to comply herewith.

31.10–20 Drydocking or hauling out—TB/ALL. (a) Each steel hull tank vessel shall be placed in drydock or on a slipway or hauled out for examination depending upon its service, as follows:

(1) Each tank vessel whose operations in salt-water service aggregate more than 6 months in a calendar year shall be drydocked or hauled out at least once each calendar year.

(2) Each tank vessel whose operations in salt-water service aggregate 6 months or less in a calendar year shall be drydocked or hauled out at least once in every 2 calendar years.

(3) Each tank ship used in fresh water service exclusively shall be drydocked or hauled out at least once in every 5 calendar years.

(4) Tank barges used in fresh water service exclusively need not be drydocked or hauled out during the first 5 calendar years after date of build, but shall be drydocked or hauled out between that time and the end of the tenth calendar year after date of build, and once in every 5 calendar years thereafter.

(b) Each wood hull tank vessel shall be placed in drydock or on a slipway, or hauled out for examination at least once every 4 years.

(c) Each tank vessel, irrespective of service which has not complied with these drydocking requirements, either because it was on voyage or was tied up, shall be drydocked or hauled out upon the completion of such voyage or before being placed in service.

(d) Whenever any tank vessel is placed in drydock or on a slipway or hauled out for repairs it shall be the duty of the master, owner, or agent to report the same, together with the nature of any repairs or alterations contemplated, to the Officer in Charge, Marine Inspection, of that zone, and if the condition or age of the vessel, in the judgment of the inspectors, renders an examination necessary, a thorough inspection shall be made by them to determine what is necessary to make such vessel seaworthy and come within the provisions of the regulations in this subchapter.

(e) Sea chests, sea valves, sea strainers and bilge injection valves shall be examined at the time of the drydockings required by paragraphs (a), (b), and (c) of this section and shall be opened up for internal examination when deemed necessary by the Officer in Charge, Marine Inspection.

31.10-23 Examination of tail shaft—T/OC. The outboard shaft or shafts on every ocean or coastwise tank ship shall be drawn for examination once at least in every 3 years: *Provided*, That if the circumstances warrant it, the Coast Guard District Commander may extend this time to the next regular drydocking period, not to exceed 4 months, and: *Provided further*, That when it is shown that a vessel has had a long period of layup, the Coast Guard District Commander may grant an extension equal to the time the vessel has been out of commission, but in no case shall the extension exceed 1 year.

31.10-25 Inspection covering repairs and alterations involving safety—TB/ALL. No extensive alterations involving the safety of a tank vessel either in regard to hull or machinery shall be made without the approval of the Commandant. Before such alterations are carried out, copies of plans and specifications in triplicate for the work involved shall be forwarded to the Officer in Charge, Marine Inspection, in whose zone the repairs will be made, for submission to Headquarters for approval. If approved one set of the plans and specifications, properly stamped and dated, shall be returned to the owner or to the repair yard designated by the owner; one set to the Officer in Charge, Marine Inspection, who forwarded the plans and specifications to Headquarters; and one set shall be retained at Headquarters. If such plans and specifications are not approved, Headquarters shall promptly notify the owner or designated shipyard wherein they fail to comply with the regulations in this chapter. No extensive repairs to the hull or machinery which affect the safety of a vessel shall be made without the knowledge of the Officer in Charge, Marine Inspection.

31.10-30 Stability test—TB/ALL. When the Officer in Charge, Marine Inspection, has reason to question the stability of any tank vessel under his jurisdiction, he shall require the owners of the tank vessel to make a stability test of such vessel.

31.10-31 Stability tests—T/OC. Each mechanically propelled tank ship of 500 gross tons and over, construction or conversion of which was started on or after November 19, 1952, shall be subjected to a stability test. A stability letter prepared by the Coast Guard and embodying the necessary instructions to insure maintenance of sufficient intact stability at all times shall be posted under glass in the pilothouse. The Commandant may allow the stability test of a ship to be dispensed with provided basic stability data are available from the stability test of a sister ship and it is shown to the satisfaction of the Commandant that reliable stability information for the exempted ship can be obtained from such basic data.

31.10-35 Permit to proceed to other ports for repairs—TB/ALL. The Officer in Charge, Marine Inspection, may issue a permit to proceed to another port for repairs, if in his judgment the vessel can proceed with safety. In the issuance of such a permit, the Officer in Charge, Marine Inspection, will state upon its face the conditions upon which it is granted and whether the vessel is to be allowed to carry freight or passengers. A vessel whose certificate of inspection has expired shall not be issued a permit to carry passengers while en route to another port for repairs.

31.10-40 Inspection during trial trip—T/ALL. On the trial trip of each new or converted tank ship, an inspector shall be present to observe from the standpoint of safety in the carriage of inflammable and/or combustible liquids in bulk, the operation of boilers, engines, steering gear, and auxiliaries; and if not satisfied with the performance of such boilers and machinery, appliances, and apparatus for stowage, he shall make such requirements as in his judgment will overcome any deficiencies which may have come under his observation.

31.10-45 Inspection of crew accommodations—TB/ALL. Crew's quarters shall be inspected to determine their sanitary condition. The Officer in Charge, Marine Inspection, upon completing such inspection, shall notify the master or officer in charge of the vessel of his findings, which shall be entered in the vessel's log book.

SUBPART 31.15—MANNING OF TANK VESSELS

31.15-1 Licensed officers and crews—TB/ALL. (a) The Officer in Charge, Marine Inspection, who inspects the vessel, shall make in the certificate of inspection for each tank vessel an entry of such complement of officers and/or crew as required by law and regulations in this subchapter, and which in the judgment of the Officer in Charge, Marine Inspection, will be necessary for her safe operation. The complement may be changed from time to time by endorsement on such certificate by an Officer in Charge, Marine Inspection, by reason of change of conditions or employment.

(b) In all cases where a certificate of inspection does not require at least two licensed officers, the Officer in Charge, Marine Inspection, shall enter in the certificate of inspection issued to any manned tank vessel subject to the regulations in this subchapter the number of the crew required to be certificated as tankermen. If the total complement of a tank vessel is either one or two persons, only one such person need be a certificated tankerman. If the total complement exceeds two, only two such persons need be certificated tankermen.

31.15-5 Tank barges—B/ALL. Tank barges need not be manned unless in the judgment of the Officer in Charge, Marine Inspection, such manning is necessary for the protection of life and property and for the safe operation of the vessel: *Provided, however*, That towing vessels, while towing barges which are not required to be manned, shall carry in the regular complement of the towing vessel and shall have on board at all times while towing, at least one licensed officer or certificated tankerman.

31.15-10 Towing vessels may carry persons in addition to crew—B/LBR. (a) Towing vessels engaged in towing tank barges on the Great Lakes, inland waters, or rivers, may be authorized by the Coast Guard District Commander of the district to carry on board such number of persons in addition to its crew as shall be deemed necessary to carry on the legitimate business of such towing vessel or barge, not exceeding, however, one person to every net ton of the towing vessel.

(b) A Coast Guard District Commander granting a license to a vessel engaged in towing to carry persons in addition to its crew shall notify the Officer in Charge, Marine Inspection, in whose jurisdiction the vessel receiving the permit is engaged, and the Officer in Charge, Marine Inspection, shall keep a record of the same.

SUBPART 31.20—WATERS OPERATED OVER

31.20-1 Waters—TB/ALL. The certificate of inspection shall show the waters over which the tank vessel is permitted to operate, such as: all waters; oceans; coastwise; Great Lakes; bays, sounds, and lakes other than the Great Lakes; rivers; or inland waters tributary to the Gulf of Mexico.

SUBPART 31.25—LOAD LINES

31.25-1 Load lines required—TB/OCL. All tank vessels of 150 gross tons or over navigating the oceans, coastwise waters, and Great Lakes are subject to the regulations in Parts 43 to 45, inclusive, Subchapter E (Load Lines), of this chapter.

SUBPART 31.30—MARINE ENGINEERING

31.30-1 Marine engineering regulations and material specifications—TB/ALL. All tank vessels are subject to the regulations contained in Parts 50 to 57, inclusive, Subchapter F (Marine Engineering) of this chapter, wherever applicable, except as such regulations are modified by the regulations in this subchapter for tank vessels.

PART 32—SPECIAL EQUIPMENT, MACHINERY, AND HULL REQUIREMENTS

SUBPART 32.01—SAFETY REQUIREMENTS

Sec.
32.01–1 Means of escape—T/ALL.
32.01–5 Life lines—TB/OCLB.
32.01–10 Rails—TB/ALL.
32.01–15 Guards at dangerous places—TB/ALL.

SUBPART 32.05—MARKINGS

32.05–1 Draft marks—TB/ALL.
32.05–5 Vessel's name on equipment—TB/ALL.
32.05–10 Name of tank ship—T/ALL.
32.05–15 Name of tank barge—B/ALL.

SUBPART 32.15—NAVIGATION EQUIPMENT

32.15–1 Fog bells—TB/ALL.
32.15–5 Whistles—T/ALL.
32.15–10 Sounding machines—T/OCL.
32.15–15 Anchors for seagoing barge—B/OC.
32.15–20 Radiotelegraph—T/ALL.
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SUBPART 32.20—EQUIPMENT INSTALLATIONS

32.20–1 Equipment installations on vessels during World War II—TB/ALL.
32.20–5 Pressure vacuum relief valves—TB/ALL.
32.20–10 Flame arresters—TB/ALL.
32.20–20 Liquid level gaging—T/ALL.

SUBPART 32.25—ALARM SYSTEMS

32.25–1 Alarm bells for tank ships constructed on or after September 15, 1943—T/ALL.
32.25–10 Alarm bells for tank ships constructed prior to September 15, 1943—T/ALL.
32.25–15 Alarm bells for manned barges—B/OC.

SUBPART 32.30—INTERIOR COMMUNICATION SYSTEMS

32.30–1 Voice tubes or telephone equipment—T/ALL.
32.30–5 Bell signals between pilothouse and engine room—T/ALL.
32.30–10 Telegraph systems—T/ALL.
32.30–15 Inspections—T/ALL.

SUBPART 32.35—MAIN AND AUXILIARY MACHINERY

32.35–1 Boilers and machinery—TB/ALL.
32.35–5 Installation of internal combustion engines—TB/ALL.
32.35–10 Steering apparatus on tank vessels—TB/ALL.
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SUBPART 32.40—ACCOMMODATIONS

32.40–1 Crew accommodations on tank ships of 100 gross tons or over constructed after January 1, 1938—T/ALL.
Sec.
32.40–5 Crew accommodations on tank ships of less than 100 gross tons and manned tank barges constructed after January 1, 1938—TB/ALL.
32.40–10 Crew accommodations on tank ships of 100 gross tons or over constructed after March 4, 1915, and prior to January 1, 1938—T/ALL.
32.40–15 Crew accommodations on tank ships and manned tank barges not otherwise provided for—TB/ALL.

SUBPART 32.45—ELECTRICAL INSTALLATIONS

32.45–1 Application—TB/ALL.
32.45–5 General installation requirements—TB/ALL.
32.45–10 Installations made during the Unlimited National Emergency—TB/ALL.
32.45–15 Location of storage batteries on tank vessels constructed after November 10, 1936—TB/ALL.

SUBPART 32.50—PUMPS, PIPING, AND HOSE FOR CARGO HANDLING

32.50–1 Cargo pumps for tank vessels constructed on or after November 10, 1936—TB/ALL.
32.50–5 Cargo pump fittings and controls on tank vessels constructed on or after November 10, 1936—TB/ALL.
32.50–10 Cargo pumps on tank vessels with independent cargo tanks which were constructed prior to November 10, 1936—TB/ALL.
32.50–15 Cargo piping on tank vessels constructed on or after July 1, 1951—TB/ALL.
32.50–20 Cargo piping for tank vessels constructed between November 10, 1936, and July 1, 1951—TB/ALL.
32.50–25 Cargo pumps and piping on tank vessels constructed prior to November 10, 1936—TB/ALL.
32.50–30 Cargo hose—TB/ALL.

SUBPART 32.52—BILGE SYSTEMS

32.52–1 Bilge pumps on tank vessels constructed or converted on or after November 19, 1952—TB/ALL.
32.52–5 Bilge piping for pump rooms and adjacent cofferdams on tank vessels constructed or converted on or after November 19, 1952—TB/ALL.
32.52–10 Bilge pumps and piping on tank vessels constructed or converted prior to November 19, 1952—TB/ALL.

SUBPART 32.55—VENTILATION AND VENTING

32.55–1 Ventilation of tank vessels constructed on or after July 1, 1951—TB/ALL.

Sec.
32.55-5 Ventilation of tank vessels constructed between November 10, 1936, and July 1, 1951—TB/ALL.
32.55-10 Ventilation for tank vessels constructed prior to November 10, 1936—TB/ALL.
32.55-15 Ventilation for hold spaces—TB/ALL.
32.55-20 Venting of cargo tanks of tank ships constructed on or after July 1, 1951—T/ALL.
32.55-25 Venting of cargo tanks of tank barges constructed on or after July 1, 1951—B/ALL.
32.55-30 Venting of cargo tanks of tank vessels constructed between November 10, 1936, and July 1, 1951—TB/ALL.
32.55-35 Venting of cargo tanks on tank vessels constructed prior to November 10, 1936—TB/ALL.
32.55-40 Venting of cargo tanks fitted with inert-gas system—TB/ALL.
32.55-45 Venting of cofferdams of tank vessels constructed on or after November 10, 1936—TB/ALL.

SUBPART 32.60—HULL REQUIREMENTS FOR TANK VESSELS CONSTRUCTED ON OR AFTER JULY 1, 1951

32.60-1 Scantlings, material, and workmanship—TB/ALL.
32.60-5 Subdivision of cargo space—TB/ALL.
32.60-10 Segregation of cargo; Grade A, B, C, or D—TB/ALL.
32.60-15 Segregation of cargo; Grade E—TB/ALL.
32.60-20 Pump rooms on tank vessels carrying Grade A, B, C, or D liquid cargo—TB/ALL.
32.60-25 Living quarters—TB/ALL.
32.60-30 Tank vessels with independent tanks—TB/ALL.
32.60-35 Tank vessels carrying Grade A liquid cargo—TB/ALL.
32.60-40 Construction and testing of cargo tanks and bulkheads—TB/ALL.

SUBPART 32.65—HULL REQUIREMENTS FOR TANK VESSELS CONSTRUCTED ON OR AFTER NOVEMBER 10, 1936, AND PRIOR TO JULY 1, 1951

32.65-1 Application—TB/ALL.
32.65-5 Scantlings, material, and workmanship—TB/ALL.
32.65-10 Subdivision of cargo space—TB/ALL.
32.65-15 Cofferdams—TB/ALL.
32.65-20 Pump rooms—TB/ALL.
32.65-25 Living quarters—TB/ALL.
32.65-30 Tank vessels with independent tanks—TB/ALL.
32.65-35 Tank vessels carrying Grade A liquids—TB/ALL.
32.65-40 Construction and testing of cargo tanks and bulkheads—TB/ALL.

SUBPART 32.70—HULL REQUIREMENTS FOR STEEL HULL TANK VESSELS CONSTRUCTED PRIOR TO NOVEMBER 10, 1936

32.70-1 Application—TB/ALL.
32.70-5 Hull requirements; general—TB/ALL.
32.70-10 Cofferdams—TB/ALL.
32.70-15 Pump rooms—TB/ALL.
Sec.
32.70-20 Pump-engine compartment—TB/ALL.
32.70-25 Cargo tanks—TB/ALL.

SUBPART 32.75—HULL REQUIREMENTS FOR WOOD HULL TANK VESSELS CONSTRUCTED PRIOR TO NOVEMBER 10, 1936

32.75-1 Application—TB/ALL.
32.75-5 Hull requirements; general—TB/ALL.
32.75-10 Cargo tanks—TB/ALL.
32.75-15 Electric bonding and grounding of tanks—TB/ALL.
32.75-20 Hold spaces and bulkheads—TB/ALL.

SUBPART 32.80—TANK BARGES CONSTRUCTED OF MATERIALS OTHER THAN STEEL OR IRON

32.80-1 General requirements—B/ALL.

AUTHORITY: Sections 32.01-1 to 32.80-1, inclusive, are issued under R. S. 4405 and 4417a, as amended, and Section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 391a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 32.01—SAFETY REQUIREMENTS

Section 32.01-1 Means of escape—T/ALL. On all tank ships where the plans and arrangements will possibly permit, all passageways leading to living quarters, or places where anyone may be regularly employed, shall be provided with not less than two avenues of escape so located that if one of such avenues is not available another may be. The locality and arrangement of such additional means of escape shall be determined by the inspectors as will in their judgment best carry out the purpose for which this provision was made.

32.01-5 Life lines—TB/OCLB. On all tank vessels where the distance is more than 150 feet between deck houses, a wire cable shall be stretched between the deck houses at all times when the vessel is loaded and being navigated, this cable to be not less than 5 feet from the deck; and there shall be attached at all times to the cable a traveler with a line of sufficient continuous length to insure its operation in order that communication between both ends of the vessel may be facilitated at all times: *Provided*, That in addition to the traveler with the endless whip, as many loose rings with lanyards attached may be placed on the cable as may be deemed necessary by the master in charge of the vessel: *Provided further*, That a fore and aft raised bridge shall be accepted in lieu of the wire cable and traveler.

32.01-10 Rails—TB/ALL. (a) All tank vessels, except unmanned tank barges, the construc-

tion or conversion of which is started on or after July 1, 1951, shall be fitted with fixed or portable rails on decks and bridges. All rails shall be in at least two courses, including the top, and shall be at least 36 inches high. Rails shall consist of solid or tubular sections or chains or wire rope or a combination thereof.

(b) For all tank vessels, except those navigating the rivers only, the construction or conversion of which was started after September 11, 1946, and prior to July 1, 1951, rails on decks or bridges shall be in at least two courses, including the top, and shall be at least 36 inches high.

32.01-15 Guards at dangerous places—TB/ALL. All exposed and dangerous places such as gears and machinery shall be properly protected with covers, guards or rails in order that the danger of accidents may be minimized. On vessels equipped with radio communication, the lead-ins shall be efficiently incased or insulated to insure against accidental shock. Such lead-ins shall be located so as not to interfere with the launching of lifeboats and life rafts.

SUBPART 32.05—MARKINGS

32.05-1 Draft marks—TB/ALL. All tank vessels of 50 gross tons and over shall have the drafts of the vessel plainly and legibly marked upon the stem and upon the sternpost or rudderpost, or at such other places forward and aft as may be necessary for easy observance. The draft shall be taken from the bottom of the lowest part of the keel to the surface of the water, the bottom of the mark to indicate the draft in feet.

32.05-5 Vessel's name on equipment—TB/ALL. The equipment of all tank vessels, such as fire hose, fire axes, lifeboats, life rafts, life preservers, and life floats, shall be painted or branded with the name of the vessel upon which they are used.

32.05-10 Name of tank ship—T/ALL. Every tank ship not documented by the Commissioner of Customs shall have the name marked upon each bow and upon the stern, and the home port shall also be marked upon the stern. The name shall be in a light color on a dark ground, or in a dark color on a light ground, and shall be distinctly visible. The smallest letters used shall be not less than 4 inches in size. In addition, every tank ship shall have her name conspicuously displayed in distinct plain letters, of not less than 6 inches in size, on each outer side of the pilothouse.

32.05-15 Name of tank barge—B/ALL. Every tank barge not documented by the Commissioner of Customs shall have its name or number carved, punch-marked, or welded on the main beam, inside the cargo hatch, or other suitable permanent part of the vessel's structure for the purpose of identification. The vessel's name or number shall be so displayed at the highest part of the vessel's hull or permanent structure that the name or number can be seen from either side.

SUBPART 32.15—NAVIGATION EQUIPMENT

32.15-1 Fog bells—TB/ALL. The efficient fog bell required upon vessels by law shall be held to mean a bell not less than 8 inches in diameter from outside to outside and constructed of bronze or brass or other material equal thereto in tone and volume of sound, and located where the sound shall be the least obstructed.

32.15-5 Whistles—T/ALL. Each tank ship shall be provided with an efficient whistle sounded by steam or by some substitute for steam to give the necessary whistle signals. All whistles shall be placed at an elevation of not less than 6 feet above the top of the pilothouse, where the clearance for passing under bridges will permit it. Tank ships navigating the Red River of the North, Yukon, and similar rivers, and rivers whose waters flow into the Gulf of Mexico, and tank ships of less than 100 gross tons may have their whistles located not less than 2 feet above the tops of their pilothouses. Such whistles or substitutes shall be satisfactory in sound and source of power for the purpose intended.

32.15-10 Sounding machines—T/OCL. All tank ships of 500 gross tons and over shall be equipped with an efficient mechanical deep-sea sounding apparatus, in addition to the ordinary deep-sea hand lead. The mechanical deep-sea sounding apparatus above required shall be installed, kept in working order, and ready for immediate use: *Provided*, That tank vessels of less than 1,500 gross tons navigating the Great Lakes exclusively need not be equipped with deep-sea sounding apparatus as required by this section.

32.15-15 Anchors for seagoing barge—B/OC. Every seagoing barge shall be equipped

with at least one anchor with suitable chain or cable to be at least equivalent to the requirements of the American Bureau of Shipping rules.

32.15–20 Radiotelegraph—T/ALL. Radiotelegraph installations are required on certain tank ships. Details of the application of this requirement, as well as the details of the installation, shall be as required by the statutes and regulations under the jurisdiction of the Federal Communications Commission.

32.15–25 Radio direction finder—T/OC. All tank ships of 1,600 gross tons and over on an international voyage or in ocean service shall be fitted with a radio direction finder. Details of the installation shall be as required by the statutes and regulations under the jurisdiction of the Federal Communications Commission. Such tank ships of over 1,600 gross tons, but not over 5,000 gross tons, construction or conversion of which was started prior to November 19, 1952, need not meet the requirements of this section until November 19, 1954.

SUBPART 32.20—EQUIPMENT INSTALLATIONS

32.20–1 Equipment installations on vessels during World War II—TB/ALL. Boilers, pressure vessels, machinery, piping, electrical and other installations, including lifesaving, fire-fighting and other safety equipment, installed on vessels during the Unlimited National Emergency declared by the President on May 27, 1941, and prior to the termination of Title V of the Second War Powers Act, as extended (Sec. 501, 56 Stat. 180, 50 U. S. C. 635), which do not fully meet the detailed requirements of the regulations in this chapter, may be continued in service if found to be satisfactory by the Commandant for the purpose intended. In each instance prior to final action by the Commandant, the Officer in Charge, Marine Inspection, shall notify Headquarters of the facts in the case, together with recommendations relative to suitability for retention.

32.20–5 Pressure vacuum relief valves—TB/ALL. The pressure vacuum relief valves shall be of a type and size approved by the Commandant for the purpose intended. For specifications and procedures re approval, see Subpart 162.017 of Subchapter Q, Specifications, of this chapter.

32.20–10 Flame arresters—TB/ALL. The flame arrester shall be of a type and size approved by the Commandant for the purpose intended. For specifications and procedures re approval, see Subpart 162.016 of Subchapter Q, Specifications, of this chapter.

32.20–20 Liquid level gaging—T/ALL. On tank ships, the construction or conversion of which is started on or after July 1, 1951, a method for determining the level of the liquid in a cargo tank without opening ullage holes, cargo hatches, or Butterworth plates, shall be provided on all tank ships certificated for the carriage of Grade A liquids: *Provided*, That ullage holes fitted with sounding pipes tightly secured to the underside of the tank tops, open at the bottom, and extending to within 18 inches or less of the bottom of the tank shall be considered as complying with the foregoing requirement.

SUBPART 32.25—ALARM SYSTEMS

32.25–1 Alarm bells for tank ships constructed on or after September 15, 1943—T/ALL. (a) All tank ships of over 100 gross tons, the construction of which is begun on or after September 15, 1943, shall have all sleeping accommodations and machinery spaces equipped with a sufficient number of alarm bells so located as to warn all occupants.

(b) The system shall operate from a continuous source of electric energy capable of supplying the system for a period of at least 8 hours without being dependent upon the main, auxiliary, or emergency generating plants.

(c) Each bell shall produce a signal of a tone distinct from that of other bell signals in the vicinity and shall be independently fused with each of these fuses located above the bulkhead deck. The bells shall be controlled by manually operated contact makers located in the pilothouse, in an accessible location in officers' quarters in midships deck house, and in the engine room. Alarm contactors in the latter two locations shall be protected by glass against tampering.

(d) The characteristics of the contact maker shall be such that it possesses:

(1) Positive contact.

(2) Watertightness (when located in open spaces subject to weather).

(3) Means whereby its electrically open or closed position can be determined by sense of touch.

(4) Means to effect a make-and-break circuit for signaling.

(5) Self-maintaining contacts.

32.25-10 Alarm bells for tank ships constructed prior to September 15, 1943—T/ALL. All tank ships, the construction of which was begun prior to September 15, 1943, shall have all sleeping accommodations equipped with a sufficient number of alarm bells so located as to warn all the occupants. The alarm bells, if electric, shall be operated from an open switch from the pilothouse or bridge. The bells shall be of such size, character, and construction, as to provide an alarm throughout the spaces for which they are provided.

32.25-15 Alarm bells for manned barges—B/OC. Each tank barge of over 100 gross tons, where the crew is divided into watches for the purpose of steering the vessel, shall be provided with a suitable alarm bell installation.

SUBPART 32.30—INTERIOR COMMUNICATION SYSTEMS

32.30-1 Voice tubes or telephone equipment—T/ALL. (a) Tank ships constructed on or after July 1, 1951, shall be equipped with voice tubes or telephone equipment to provide communication between the pilothouse and (1) the emergency steering station, (2) the steering engine room, and (3) the engine room. Such equipment when installed, or fitted as replacements on such vessels, shall conform to the requirements in this section and in Subchapter Q (Specifications), of this chapter.

(b) Tank ships constructed before July 1, 1951, the voice tubes or telephone equipment installed thereon, or fitted as replacements on such vessels, to provide communication between the pilothouse and (1) the emergency steering station, (2) the steering engine room, and (3) the engine room, shall conform to the requirements in Paragraphs (c) and (d) of this section and insofar as possible those requirements in Subchapter Q (Specifications) of this chapter.

(c) Where the length of voice tube required exceeds 125 feet, or if for other reasons efficient communications cannot be obtained by a voice tube installation, telephone equipment shall be substituted.

(d) Where the length of the voice tube as installed is not over 75 feet, the tube used shall be at least 2 inches in diameter. Installations having a length of over 75 feet shall be at least 2½ inches in diameter.

32.30-5 Bell signals between pilothouse and engine room—T/ALL. Tank ships using the bell signals between the pilothouse and the engine room shall have a tube of proper size so arranged as to return the sound of the bell signals to the pilothouse, and shall also be provided with a speaking tube or other device for the purpose of conversation between the pilothouse and engine room.

32.30-10 Telegraph systems—T/ALL. (a) Nothing in this subpart shall be construed to prevent the use of the so-called telegraph now in use for conveying signals from the pilothouse to the engine room, but in all cases where the telegraph is used the signal shall be repeated back.

(b) All electrical engine order telegraph systems on vessels, not also equipped with mechanical telegraphs, shall be provided with an alarm, located on the bridge, to indicate visually and audibly the failure of power to the system.

32.30-15 Inspections—T/ALL. Signal apparatus between pilothouse, engine room, steering engine room, and emergency steering stations—whether they be telegraph, bell, whistle, telephone or voice tube—will be examined and tested at each annual inspection.

SUBPART 32.35—MAIN AND AUXILIARY MACHINERY

32.35-1 Boilers and machinery—TB/ALL. Boilers, main and auxiliary machinery, and piping systems shall conform to the requirements of Subchapter F (Marine Engineering) of this chapter, except as otherwise provided for in this subchapter.

32.35-5 Installation of internal combustion engines—TB/ALL. Each internal combustion engine located on the weather deck shall be provided with a ventilated metal hood or, where space permits, with a well-ventilated metal housing of sufficient size to allow for proper operation and maintenance.

32.35–10 Steering apparatus on tank vessels—TB/ALL. Tank vessels shall be provided with steering apparatus as required by Subpart 57.25 of Subchapter F (Marine Engineering) of this chapter.

32.35–15 Communication—T/ALL. Efficient means of communication shall be provided between the pilothouse, the emergency steering station, and the steering engine room.

SUBPART 32.40—ACCOMMODATIONS

32.40–1 Crew accommodations on tank ships of 100 gross tons or over constructed after January 1, 1938—T/ALL. On all tank ships of 100 gross tons and over, the construction of which is begun after January 1, 1938, the minimum requirements relative to construction, location, and equipment of crew accommodations are as follows:

(a) Sleeping quarters. At least 120 cubic feet of space and not less than 16 square feet of deck areas shall be allotted to each member of the crew for sleeping purposes. In measuring sleeping quarters allotted to crews of vessels, the Officer in Charge, Marine Inspection, shall not deduct from the total volume or from the deck area any equipment contained therein which is provided for the exclusive use of the crew. Not more than one bunk shall be placed above another, and the lower bunk shall be at least 12 inches above the deck. The upper bunk shall be located as nearly as practicable midway between the lower bunk and the lower side of the deck beams overhead.

(b) Toilet and washing facilities. (1) Each such tank ship shall be provided with at least one washbasin, one bathtub or shower, and one toilet for each eight members, or portion thereof, in the crew to be accommodated. The crew to be accommodated shall include all members who do not occupy rooms to which private facilities are attached.

(2) When the engine room crew, exclusive of licensed officers and others separately provided for, exceeds eight, separate washing facilities shall be provided.

(3) Vessels contracted for after January 1, 1949, shall have the toilet rooms separate from the washrooms, and at least one washbasin shall be fitted in each toilet room.

(c) Hospital accommodations. Each such tank vessel which in the ordinary course of its trade makes voyages of more than 3 days' duration between ports and which carries a crew of 12 or more, shall be equipped with a compartment suitably separated from other spaces for hospital purposes, and such compartment shall have at least 1 bunk for every 12 seamen constituting her crew, provided that not more than 6 bunks shall be required in any case.

(d) Location, construction and equipment. (1) Crew accommodations shall not be located forward of the collision bulkhead, or where there will be undue risk to members of the crew in getting to stations.

(2) Where crew quarters abut galley, boiler, or engine room bulkheads, such bulkheads shall be insulated with fire-resistive material to reduce transmission of heat.

(3) Insofar as practicable, crew quarters shall be so located or constructed that they will be protected against objectionable odors of cargo, fuel tanks, paint lockers, oil rooms, bilges, toilets, etc.

(4) Crew quarters shall be adequately lighted, heated, and ventilated. The minimum standard for natural lighting is that it will be possible in daylight and in clear weather to read the print of an ordinary newspaper in any part of the space allotted. When it is not possible to provide adequate natural lighting, artificial lighting may be accepted on the same basis: *Provided, however,* That in the artificial lighting of the crew's quarters, the use of portable wiring is prohibited, except when approved by the chief engineer.

(5) Bare metal surfaces of ship's sides and metal weather decks overhead which are not decked over with wood externally, shall be covered with suitable fire-resistive material to aid in keeping the crew's quarters dry.

(6) In the ventilation of crew accommodations provisions shall be made for the ingress of fresh air and for the egress of impure air; it shall be adequate for the purpose intended, and so arranged as to be effective in any ordinary weather conditions, and to distribute fresh air without undue discomfort to the occupants. Where natural ventilation is provided, each inlet shall have an area of at least 6 square inches for each person accommodated, the outlet to be at least equal in

size to the inlet. In no case shall any one such inlet or outlet have a cross sectional area of less than 24 square inches.

(7) Mechanical ventilation may be provided if such system is equal in effectiveness to the requirements for natural ventilation and is approved by the Commandant.

(8) Mess rooms shall be provided for both officers and crew, and shall be separate from each other where space and conditions will permit. Such mess rooms shall be sufficient in size to accommodate all persons allotted to such space: *Provided, however*, That this subparagraph need not apply to vessels operating on the Great Lakes, lakes, bays and sounds, or rivers.

(9) All washbasins, shower baths, or tubs required by the regulations in this subchapter shall be equipped with proper plumbing, including hot and cold running water. Washbasins for the crew may be located in the crew's sleeping quarters, if properly installed, equipped with proper plumbing for draining and supplied with hot and cold running water.

(10) All toilets shall be installed and equipped with the proper plumbing for flushing. Where more than one toilet is located in a space or compartment, each toilet shall be separated with a screen constructed of fire-resistive material to afford privacy. Such screens may be installed so as to be open at top and bottom for ventilation purposes. Toilet seats shall be so constructed as to remain in an upright position when not in use.

(11) Floors of toilets and washrooms shall be covered with cement, tile, or other suitable covering.

(12) On each such tank ship there shall be provided at least one sink or other suitable means for washing clothes.

(13) Each hospital shall have a toilet, washbasin, and bathtub or shower conveniently situated.

(14) A clothes locker shall be provided for each person accommodated of a size not less than 12″ x 21″ x 5′ high and so placed as to be readily accessible.

(15) Living accommodations shall be properly screened to exclude insects.

32.40-5 Crew accommodations on tank ships of less than 100 gross tons and manned tank barges constructed after January 1, 1938—TB/ALL. All tank ships of less than 100 gross tons and all manned tank barges, the construction of which is begun after January 1, 1938, shall be provided with crew accommodations of sufficient size, adequate construction, and with suitable equipment to provide for the protection and accommodations of its crew in a manner practicable for the size, facilities and service of the vessel, and consistent with the principles underlying the requirements for crew accommodations on tank ships of 100 gross tons or more.

32.40-10 Crew accommodations on tank ships of 100 gross tons or over constructed after March 4, 1915, and prior to January 1, 1938—T/ALL. On all tank ships of 100 gross tons or over the construction of which was begun after March 4, 1915, and prior to January 1, 1938, the crew accommodations shall be of a character and number in compliance with § 32.40-1 (a), (b), (c), except that separate washing facilities are not required where the engine-room crew, exclusive of licensed officers, and others separately provided for, does not exceed 10. In cases where an improvement is necessary in the sanitary conditions of such vessels, § 32.40-1 (d) will also apply in principle insofar as space and conditions will permit.

32.40-15 Crew accommodations on tank ships and manned tank barges not otherwise provided for—TB/ALL. All tank ships and all manned tank barges not heretofore provided for shall have crew quarters and washing and toilet facilities in keeping with the age, size, facilities and service of the vessel, and suitable for the accommodations and protection of the crew.

SUBPART 32.45—ELECTRICAL INSTALLATIONS

32.45-1 Application — TB/ALL. (a) The electrical installation on a tank vessel, the construction or conversion of which is started on or after November 10, 1936, shall be in compliance with this subpart, and to the extent that such installation is not covered by this subpart, it shall be at least equivalent to the Commandant's general requirements.

(b) The electrical installation on a tank vessel, the construction or conversion of which was started prior to November 10, 1936, shall be maintained in a safe and in a good mechanical condition, and shall comply with the regulations in effect when the vessel was built, or to the requirements of a recognized classification society. Any major change in the electrical installation or any conversion shall comply with this subpart.

32.45–5 General installation requirements—TB/ALL. (a) Where practicable, electrical cable is to be located well inboard from the sides, preferably along or near the centerline, to reduce the risk of injury in the event of collision, but it shall be kept clear of cargo tank openings. Except where Grade E liquids only are involved, feeders shall be run as far as practicable to avoid cargo pump rooms and enclosed spaces immediately adjoining cargo tanks.

(b) The armor on all cables shall be electrically and mechanically continuous.

(c) Except where Grade E liquids only are involved, switchboards, distributing panels, switches, fuses, and other current-interrupting devices shall not be fitted in cargo pump rooms or enclosed spaces immediately adjoining cargo tanks.

(d) Portable extension cables and fittings are to be of an approved type.

(e) Main distribution circuits shall be protected against overload by circuit breaking devices, the capacity of which shall be marked at each such device.

32.45–10 Installations made during the Unlimited National Emergency—TB/ALL. (a) For tank vessels, the contract for the construction of which was signed prior to September 2, 1945, and specification covering electrical installations titled "United States Coast Guard Specification for Electrical Installations on MerchantVessels," dated August 31, 1944, revised March 6, 1945,[1] is, during the Unlimited National Emergency, applicable as alternative provisions to those contained in this subpart.

(b) For vessels the contract for the construction of which is signed on and after September 2, 1945, those parts of the specification covering electrical installations, titled "United States Coast Guard Specification for Electrical Installations on Merchant Vessels," dated August 31, 1944, revised March 6, 1945,[1] specified in paragraphs 1, 4, and 5, thereof relating to electric cable are, during the Unlimited National Emergency, applicable as alternative provisions to those contained in this subpart.

32.45–15 Location of storage batteries on tank vessels constructed after November 10, 1936—TB/ALL. Storage batteries shall not be located in cargo pump rooms. The space in which they are located shall be well ventilated and they shall be protected against mechanical and electrical injury including short circuiting and overloading. Batteries shall be secured against movement, and acid batteries shall be set in lead-lined trays at least 3 inches deep of at least 4-pound sheet lead.

SUBPART 32.50—PUMPS, PIPING, AND HOSE FOR CARGO HANDLING

32.50–1 Cargo pumps for tank vessels constructed on or after November 10, 1936—TB/ALL. On all tank vessels, the construction or conversion of which is started on or after November 10, 1936, the cargo pumps shall be designed and installed to minimize the danger of sparking. Special care shall be exercised in the design of packing spaces in order to secure ample depth and accessibility of glands. Where cargo pump shafts pierce gastight bulkheads, stuffing boxes with readily accessible gastight glands shall be provided.

32.50–5 Cargo pump fittings and controls on tank vessels constructed on or after November 10, 1936—TB/ALL. (a) On all tank vessels, the construction or conversion of which is started on or after November 10, 1936, where a cargo pump is capable of developing a pressure exceeding 125 pounds at the pump under shutoff head conditions (based on water), a suitable relief valve shall be installed between the pump and shutoff valve in the cargo pump discharge and piped back into the suction. The relief valve setting shall not exceed the pressure for which the piping system is designed.

(b) A pressure gage shall be installed for each pump discharge, and it shall be located at a point visible with respect to the pump controls.

[1] A copy of the specifications may be obtained upon request from the Commandant (MMT), United States Coast Guard Headquarters, Washington 25, D. C., or any Coast Guard District Commander.

32.50-10 Cargo pumps on tank vessels with independent cargo tanks which were constructed prior to November 10, 1936—TB/ALL. (a) Cargo pumps on tank vessels, the construction or conversion of which was started prior to November 10, 1936, may be located in a hold space containing independent cargo tanks or on deck. If the pump driving unit is of the type permitted in cargo pump rooms, it also may be located in the hold space. If other types of driving units are used, they shall be located on deck or in an engine compartment. If the pump drive shaft passes through decks or bulkheads into a hold space or pump room, it shall be provided with suitable stuffing boxes at such points.

32.50-15 Cargo piping on tank vessels constructed on or after July 1, 1951—TB/ALL. (a) On all tank vessels, the construction or conversion of which is started on or after July 1, 1951, the cargo piping shall be:

(1) A fixed cargo piping system shall be installed on a tank vessel carrying Grade A, B, or C cargo. The piping shall be arranged so as to avoid excessive stresses at the joints. For sizes exceeding 2 inches in diameter, flanged, welded, or other approved types of joints shall be employed. Packing material shall be suitable for the cargo carried. Connections at bulkheads shall be made so that the plating does not form part of a flanged joint. Piping may be carried through bunker spaces and deep tanks provided it is run through a pipe tunnel. The tunnel may be omitted where the pipe is extra heavy, all joints are welded, and bends are installed to provide for expansion and contraction.

(2) Cargo piping, where installed in tank vessels carrying Grade D or E cargo only, shall conform with the requirements contained in Subparagraph (1) of this paragraph.

(3) Cargo piping shall not pass through spaces containing machinery where sources of vapor ignition are normally present: *Provided*, That, in special cases the Commandant may permit the piping to pass through such spaces if Grade E liquids only are involved.

(b) Valve operating rods in cargo tanks shall be solid, except that tank barges having plug cocks inside the cargo tanks may have operating rods of extra heavy pipe with the annular space between the lubricant tube and the pipe wall sealed with a nonsoluble material to prevent penetration of the cargo. Valve operating rods shall be of ample size, well guided and supported, and attached to the valve stems in a manner so as to prevent the operating rods from working loose. Where the operating rods pass through a deck, gastight stuffing boxes shall be fitted. The leads of operating rods shall be as direct as possible. Valves shall be of suitable design for the intended service.

(c) All cargo loading and discharge hose connections shall be fitted with valves or blind flanges.

32.50-20 Cargo piping for tank vessels constructed between November 10, 1936, and July 1, 1951—TB/ALL. (a) On tank vessels, the construction or conversion of which is started on or after November 10, 1936, and prior to July 1, 1951, the piping shall be arranged so as to avoid excessive stresses at the joints. For sizes exceeding 2 inches in diameter, flanged, welded, or other approved types of joints shall be employed. Packing material shall be suitable for the cargo carried. Connections at bulkheads shall be made so that the plating does not form part of a flanged joint. Piping may be carried through bunker spaces and deep tanks provided it is run through a pipe tunnel. The tunnel may be omitted where the pipe is extra heavy, all joints are welded, and bends are installed to provide for expansion and contraction.

(b) Cargo piping shall not pass through spaces containing machinery where sources of vapor ignition are normally present: *Provided*, That in special cases the Commandant may permit the piping to pass through such spaces if Grade E liquids only are involved.

(c) Valve operating rods in the cargo tanks shall be solid and of ample size, well guided and supported, and attached to the valve stems in a manner to guard against their working loose. Where such valve rods pass through the deck, gastight stuffing boxes shall be fitted. The leads of valve rods shall be as direct as possible. All valves and fittings shall be of material, design, and manufacture for the intended service on the cargo system; either rising or nonrising stem valves may be used.

32.50–25 Cargo pumps and piping on tank vessels constructed prior to November 10, 1936—TB/ALL. On tank vessels, the construction or conversion of which was started prior to November 10, 1936, cargo pumps and piping which do not fully comply with the regulations in this subchapter shall be made as nearly equal to the requirements for tank vessels constructed between November 10, 1936, and July 1, 1951, as is necessary in the interest of safety. Cargo pipe lines may pass through cargo pump engine compartments provided no cargo valves are located therein.

32.50–30 Cargo hose—TB/ALL. Cargo hose, when carried on tank vessels, shall be of a grade suitable for oil service, and shall be designed to withstand the pressure of the shutoff head of the cargo pump or pump relief valve setting, less static head, but in no case less than 100 pounds per square inch.

SUBPART 32.52—BILGE SYSTEMS

32.52–1 Bilge pumps on tank vessels constructed or converted on or after November 19, 1952—TB/ALL. The number and arrangement of bilge pumps on each tank vessel shall conform to the requirements of Part 55 of Subchapter F (Marine Engineering) of this chapter, except as hereinafter provided in this subpart.

32.52–5 Bilge piping for pump rooms and adjacent cofferdams on tank vessels constructed or converted on or after November 19, 1952—TB/ALL. (a) Provisions shall be made for removing drainage from the pump room bilges and adjacent cofferdams. A separate bilge pump, ejector, or bilge suction from a cargo pump or cargo stripping pump may be provided for this purpose. The bilge pump shall not be located in nor shall the piping pass through spaces containing machinery where sources of vapor ignition are normally present.

(b) Where a bilge suction is provided from a cargo or stripping pump, a stop-check valve shall be fitted in the suction branch, and an additional stop valve shall be fitted also if the bilge suction branch can be subjected to a head of oil from the filling line.

(c) Means shall be provided for controlling the cargo or pump room bilge pumps and their suctions or discharges in order that a flooded pump room may be pumped out. Suitable portable or manually operated pumps may be accepted as complying with this provision, or alternatively, the pump controls shall be arranged so that they are operable from inside the pump room and either from an accessible position outside the pump room, or from the pump room casing above the freeboard deck.

32.52–10 Bilge pumps and piping on tank vessels constructed or converted prior to November 19, 1952—TB/ALL. (a) On tank vessels, the construction or conversion of which was started prior to November 19, 1952, bilge pumps and piping which do not fully comply with the regulations of this subchapter shall be made as nearly equal to the requirements for tank vessels constructed on or after November 19, 1952, as is necessary in the interest of safety.

(b) Bilge suctions from hold spaces containing independent cargo tanks may be connected to cargo pumps or stripping pumps, provided the installation complies with the requirements of § 32.52–5 (b).

SUBPART 32.55—VENTILATION AND VENTING

32.55–1 Ventilation of tank vessels constructed on or after July 1, 1951—TB/ALL. (a) On all tank vessels, the construction or conversion of which is started on or after July 1, 1951, all enclosed parts of the vessel, other than cargo, fuel, and water tanks and cofferdams, shall be provided with efficient means of ventilation.

(b) Compartments containing machinery where sources of vapor ignition are normally present shall be ventilated in such a way as to remove vapors from points near the floor level or the bilges. Effective steam or air actuated gas ejectors, blowers or ventilators fitted with heads for natural ventilation, with at least one duct extending to immediately below the floor plates will be approved for this purpose. Machinery spaces below the freeboard deck, in which fuels with flash point of 110° F. or lower are used, shall be equipped with power ventilation. (See § 32.60–20 for other requirements concerning pump rooms.)

32.55–5 Ventilation of tank vessels constructed between November 10, 1936, and July 1, 1951—TB/ALL. (a) On tank vessels, the con-

struction or conversion of which was started on or after November 10, 1936, and prior to July 1, 1951, all enclosed parts of the vessel, other than cargo, fuel, and water tanks and cofferdams, shall be provided with efficient means of ventilation.

(b) Pump rooms and compartments containing machinery where sources of vapor ignition are normally present shall be ventilated in such a way as to remove vapors from points near the floor level or the bilges. Effective steam or air actuated gas ejectors or blowers or ventilators fitted with heads for natural ventilation, will be approved for this purpose. (See § 32.65–20 for other requirements concerning pump rooms.)

32.55–10 Ventilation for tank vessels constructed prior to November 10, 1936—TB/ALL. Ventilation of tank vessels, the construction or conversion of which was started prior to November 10, 1936, shall be equal to the requirements of tank vessels constructed before July 1, 1951, where the changes are, in the opinion of the Officer in Charge, Marine Inspection, necessary in the interest of safety.

32.55–15 Ventilation for hold spaces—TB/ALL. Hold spaces containing independent cargo tanks shall be considered to be equivalent to cargo pump rooms and shall be ventilated and safeguarded as such.

32.55–20 Venting of cargo tanks of tank ships constructed on or after July 1, 1951—T/ALL—(a) Venting required. (1) On all tank ships, the construction or conversion of which is started on or after July 1, 1951, each cargo tank shall be equipped with a vent. The diameter of a vent shall be not less than 2½ inches.

(2) In any case where a venting system is required for a particular grade of liquid, the venting system permitted for a higher grade of liquid may be used instead.

(b) Grade A liquids. (1) Cargo tanks in which Grade A liquids are to be transported shall be fitted with a venting system consisting of a branch vent line from each cargo tank connected to a vent header which shall extend to a height above the weather deck equal to at least one-third the beam of the vessel and shall terminate at a comparable distance from any other living or working space, ventilator inlet, or source of ignition. When special conditions will prevent the vent line or header outlets being permanently installed at a height above the deck of one-third the beam of the vessel, then an adjustable system shall be provided which, when extended vertically, shall be capable of reaching a height of one-third the beam of the vessel.

(2) A weather hood may be installed at the vent outlet providing it is of such design as not to direct the flow of vapor below the horizontal.

(3) The branch vent lines shall consist of either:

(i) Pipe with no valves or other hindrances to a free flow of gas; or,

(ii) Piping fitted with a pressure vacuum relief valve, provided means are supplied for relieving all internal pressure on cargo tanks by fitting the valve with a positive means for opening its pressure valve to allow free passage of gases through the branch vent line or by the installation of a bypass fitted with a manually operated stop valve.

(4) The vent header shall be fitted with a flame arrester or pressure vacuum relief valve. If a pressure vacuum relief valve is used in the header, means shall be provided for relieving all internal pressure on cargo tanks by fitting the valve with a positive means for opening its pressure valve to allow free passage of gases through the header or by the installation of a bypass fitted with a manually operated stop valve. A suitable means of relieving pressure shall be fitted in the header in order to prevent excess pressure being built up in the tanks, in the event of overfilling of the latter. The vent header system shall be provided with suitable connections for flushing and draining. The vent header system shall be of sufficient capacity as to be able to carry off all displaced air and vapors during loading of the cargo tanks without opening of ullage plates, cargo hatches, etc. See § 32.20–20 for liquid level gaging requirements.

(c) Grade B or C liquids. Cargo tanks in which Grade B or C liquids are to be transported shall be fitted with either individual pressure-vacuum relief valves which shall extend to a reasonable height above the weather deck or shall be fitted with a venting system consisting of branch vent lines connected to a vent header which shall extend to a reasonable height above the weather deck and be fitted with a flame arrester or

a pressure-vacuum relief valve at the outlet to the atmosphere. The vent header system, if fitted, shall be provided with suitable connections for flushing and draining, and if desired, stop valves may be placed in the individual branch vent lines provided that each such stop valve is bypassed by a pressure-vacuum relief valve.

(d) Grade D or E liquids. Cargo tanks in which Grade D or E liquids only are to be transported shall be fitted with gooseneck vents and flame screens.

32.55–25 Venting of cargo tanks of tank barges constructed on or after July 1, 1951—B/ALL.—(a) Venting required. (1) On all tank barges, the construction or conversion of which is started on or after July 1, 1951, each cargo tank shall be equipped with a vent. The diameter of a vent shall be not less than 2½ inches.

(2) In any case where a venting system is required for a particular grade of liquid, the venting system permitted for a higher grade of liquid may be used instead.

(b) Grade A, B, or C liquids. Cargo tanks in which Grade A, B, or C liquids are to be transported shall be fitted with either individual pressure-vacuum relief valves which shall extend to a reasonable height above the weather deck or shall be fitted with a venting system consisting of branch vent lines connected to a vent header which shall extend to a reasonable height above the weather deck and be fitted with a pressure-vacuum relief valve at the outlet to the atmosphere. The vent header system, if fitted, shall be provided with suitable connections for flushing and draining, and if desired, stop valves may be placed in the individual branch vent lines*: Provided*, That each such stop valve is bypassed by a pressure-vacuum relief valve.

(c) Grade D or E liquids. Cargo tanks in which Grade D or E liquids only are to be transported shall be fitted with gooseneck vents and flame screens unless such tanks are vented by pressure-vacuum relief valves or a venting system of branch vent lines and a vent header.

32.55–30 Venting of cargo tanks of tank vessels constructed between November 10, 1936, and July 1, 1951—TB/ALL.—(a) Venting required. On all tank vessels, the construction or alteration of which is started on or after November 10, 1936, and prior to July 1, 1951, each cargo tank shall be equipped with a vent. The details of the venting system shall meet the requirements of this section, or alternatively, the requirements of either § 32.55–20 or § 32.55–25, as applicable, shall be met.

(b) Grade A liquids. (1) Cargo tanks in which Grade A liquids are to be transported shall be fitted with a venting system consisting of branch vent line from each cargo tank connected to a vent header which shall extend to a reasonable height above the weather deck and be fitted with a flame arrester or pressure-vacuum relief valve. Each branch vent line may be provided with a manually operated control valve, provided it is bypassed with a pressure-vacuum relief valve or each cargo tank to which such a branch vent line is connected is fitted with an independent pressure-vacuum relief valve. The vent header system shall be provided with suitable connections for flushing and draining.

(2) In barges with independent tanks carrying Grade A liquids, separate discharge pipes may be fitted to each pressure-vacuum relief valve, or the pressure-vacuum relief valve may be elevated, so that in either case the discharge from such valve will not be less than 7 feet above the deck where practicable.

(c) Grade B or C liquids. Cargo tanks in which Grade B or C liquids are to be transported shall be fitted with individual pressure-vacuum relief valves or shall be fitted with a venting system consisting of branch vent lines connected to a vent header which shall extend to a reasonable height above the weather deck and be fitted with a flame arrester or a pressure-vacuum relief valve at the outlet to the atmosphere.

(d) Grade D or E liquids. Cargo tanks in which Grade D or E liquids only are to be transported shall be fitted with gooseneck vents and flame screens unless such tanks are vented by pressure-vacuum relief valves or a venting system of branch vent lines and a vent header.

32.55–35 Venting of cargo tanks on tank vessels constructed prior to November 10, 1936—TB/ALL. The venting of cargo tanks of tank vessels, the construction or alteration of which was

started prior to November 10, 1936, shall be made to equal the requirements of tank vessels constructed before July 1, 1951, where the changes are, in the opinion of the Officer in Charge, Marine Inspection, necessary in the interests of safety: *Provided*, That on such vessels carrying Grade A cargo the requirements in § 32.55–30 (b) shall be met.

32.55–40 Venting of cargo tanks fitted with inert-gas system—TB/ALL. A tank vessel equipped with an approved system for maintaining all cargo tank vapor spaces noninflammable shall be accepted in lieu of the requirements of §§ 32.55–20, 32.55–25, 32.55–30 or 32.55–35.

32.55–45 Venting of cofferdams of tank vessels constructed on or after November 10, 1936—TB/ALL. On all tank vessels, the construction or conversion of which was started on or after November 10, 1936, cofferdams shall be provided with gooseneck vents fitted with a flame screen or pressure-vacuum relief valves. The diameter of a vent shall be not less than 2½ inches.

SUBPART 32.60—HULL REQUIREMENTS FOR TANK VESSELS CONSTRUCTED ON OR AFTER JULY 1, 1951

32.60–1 Scantlings, material, and workmanship—TB/ALL. All tank vessels, the construction or conversion of which is started on or after July 1, 1951, shall conform to the requirements in this subpart in construction of hulls. The hull and deck houses shall be of steel or iron construction except that the pilothouse and decks over quarters may be constructed of wood. Scantlings, material, and workmanship, subdivision of cargo spaces, fitting of cofferdams, and testing of tanks shall be at least equivalent to the requirements of the American Bureau of Shipping or other recognized classification society.

32.60–5 Subdivision of cargo space—TB/ALL. The cargo space shall be divided into tight compartments as necessary to avoid excessive stresses and to provide stability.

32.60–10 Segregation of cargo; Grade A, B, C, or D—TB/ALL—(a) General. The galleys, living quarters, navigation spaces, general cargo spaces, boiler rooms, and enclosed spaces containing machinery, where sources of vapor ignition are normally present, shall be segregated from cargo tanks by cofferdams or pump rooms or tanks, either empty or used to carry liquid having a flash point of 150° F. or above, or deck spaces enclosed or open.

(b) Cargo tank spaces. Cargo tank spaces shall extend to the main deck, with hatches and vents located on the weather deck. Liquids having a flash point of not less than 150° F. may be carried in the bulk tanks located beyond the segregating cofferdams and/or pump rooms.

CROSS REFERENCE: *See* drawing No. 1 in the Appendix.

(c) Enclosed spaces. (1) Enclosed spaces immediately above the bulk cargo tanks shall contain no electrical circuit interrupting or power devices. Through runs of electrical cable are permitted. Lighting shall be effected by means of approved explosion-proof or magazine type lighting fixtures.

(2) When the vessel is not gas free no portable lighting equipment shall be used except explosion-proof, self-contained, battery-fed lamps.

(3) Cargo and vent piping passing through enclosed spaces immediately above the bulk cargo tanks shall be continuous except that flanged joints connecting pipe sections will be permitted.

(4) No openings to cargo tank shall be permitted other than stuffing boxes through which valve control rods or permanently installed gage tapes extend and openings for use of tank cleaning machines. Openings for tank cleaning machines, when not in use, shall be kept closed by means of gastight bolted plates and when in use shall be made essentially gas and watertight by covers through which hose or pipe to the tank cleaning machines extend.

(5) The overhead in way of quarters shall be gastight.

CROSS REFERENCE: *See* drawing No. 1 in the Appendix.

(d) Stowage spaces. The spaces described in paragraph (c) of this section may be used for stowage purposes and for general cargo: *Provided*, That adequate ventilation is furnished.

(e) Openings. Except as provided in paragraph (c) of this section, there shall be no manholes or other openings from cargo tanks to any other enclosed spaces. Any vents, sounding tubes, and similar piping passing through such tanks shall be run in a suitable trunk.

32.60–15 Segregation of cargo; Grade E—TB/ALL—(a) General. The galleys, living quarters, navigation spaces, general cargo spaces, boiler rooms, and enclosed spaces containing machinery, where sources of vapor ignition are normally present, shall be segregated from the cargo tanks by tight bulkheads and intervening spaces are not required.

(b) Cargo tank spaces. Cargo tank spaces can be terminated at any deck with hatches on the same deck, but the vent lines shall be extended to the weather deck. Butterworth openings and extension rods may be located on the tank top.

(c) General cargo spaces. General cargo spaces, regardless of location, shall have no special restrictions in regard to electrical installations.

32.60–20 Pump rooms on tank vessels carrying Grade A, B, C, or D liquid cargo—TB/ALL—(a) Cargo pumps. Cargo pumps shall be isolated from sources of vapor ignition by gastight bulkheads. A gastight bulkhead between the pump room and the pump engine room may be pierced for drive shaft and pump engine control rods provided such openings are fitted with stuffing boxes or other approved gland arrangement. A steam driven pump shall not be considered a source of vapor ignition provided the steam temperature does not exceed 500° F.

CROSS REFERENCE: *See* drawing No. 2 in Appendix.

(b) Electrical installations—(1) Equipment. No electric lighting or power circuit interrupting or power devices shall be installed in pump rooms. Through runs of electrical cable are permitted in pump rooms.

(2) Lighting. Lighting of pump rooms shall be effected by means of approved explosion-proof or magazine-type lighting fixtures. When the vessel is not gas free no portable lighting equipment shall be used except approved explosion-proof, self-contained, battery-fed lamps.

(c) Ventilation. Pump rooms of all tank vessels shall be ventilated in such a way as to remove vapors from points near the floor level or bilges. Pump rooms on tank ships handling Grade A, B, or C liquid cargo, with machinery located below the freeboard deck, shall be equipped with power ventilation. Pump rooms equipped with power ventilation shall have the ventilation outlets terminate more than six feet from any opening to the interior part of the vessel which normally contains sources of vapor ignition.

(d) Access. The access to a cargo pump room shall be from the open deck.

32.60–25 Living quarters—TB/ALL. For living quarters the partitions and sheathing shall be of an approved fire resistive construction. The specification for incombustible materials is in Subchapter Q (Specifications) of this chapter.

32.60–30 Tank vessels with independent tanks—TB/ALL. (a) Independent cargo tanks may be located in hold spaces or in other cargo tanks; however, a working space of at least 15 inches shall be maintained around each independent tank, or else provisions shall be made for moving such tanks to furnish such working space, except that less than 15 inches around such tanks may be permitted if in the judgment of the Officer in Charge, Marine Inspection, having jurisdiction, a satisfactory inspection of the cargo tanks and hull structure can be made.

(b) When an independent cargo tank is located in an enclosed space other than a cargo tank, such enclosed space shall be considered as equivalent to a pump room and shall be safeguarded as such as required by this subpart.

32.60–35 Tank vessels carrying Grade A liquid cargo—TB/ALL. Grade A liquids having a Reid vapor pressure in excess of 25 pounds per square inch shall be transported in cargo tanks which are independent of the hull.

32.60–40 Construction and testing of cargo tanks and bulkheads—TB/ALL. (a) All cargo tanks vented at gage pressure of 4 pounds per square inch or less shall be constructed and tested as required by standards established by the American Bureau of Shipping or other recognized classification society. The design of cargo tanks integral with the hull and vented at a gage pressure exceeding 4 pounds per square inch but not exceeding 10 pounds per square inch gage pressure will be given special consideration by the Commandant.

(b) Cargo tanks vented at a gage pressure exceeding 10 pounds per square inch are considered unfired pressure vessels and shall be of cylindrical or similar design and meet the requirements of

Parts 52 through 61 of Subchapter F (Marine Engineering) of this chapter.

SUBPART 32.65—HULL REQUIREMENTS FOR TANK VESSELS CONSTRUCTED ON OR AFTER NOVEMBER 10, 1936, AND PRIOR TO JULY 1, 1951

32.65–1 Application — TB/ALL. The requirements in this subpart apply to all tank vessels, the construction or conversion of which was started on or after November 10, 1936, and prior to July 1, 1951.

32.65–5 Scantlings, material, and workmanship—TB/ALL. The hull and deck houses shall be of steel or iron construction except that the pilothouse and decks over quarters may be constructed of wood. Scantlings, material, and workmanship, subdivision of cargo spaces, fitting of cofferdams, and testing of tanks shall be at least equivalent to the requirements of the American Bureau of Shipping or other recognized classification society.

32.65–10 Subdivision of cargo space—TB/ALL. The cargo space shall be divided into tight compartments as necessary to avoid excessive stresses and to provide stability.

32.65–15 Cofferdams—TB/ALL. Tank vessels equipped to carry Grade A, B, C, or D liquids shall have their galleys, living quarters, general cargo spaces, boiler rooms, and enclosed spaces containing propelling machinery or other machinery where sources of vapor ignition are normally present, segregated from their cargo tanks by cofferdams or equivalent pump rooms, tanks, or air spaces.

CROSS REFERENCE: *See* drawing No. 1 in the Appendix.

32.65–20 Pump rooms—TB/ALL. (a) Tank vessels handling Grade A, B, C, or D liquids shall have their cargo pumps isolated from all sources of vapor ignition by gastight bulkheads. Totally enclosed motors of the "explosion proof" type, motors ventilated on both the intake and exhaust by ducts to atmosphere, and engines driven by steam shall not be considered to be sources of vapor ignition. The gastight bulkhead between the pump room and the pump-engine compartment may be pierced by fixed lights, drive shaft and pump-engine control rods, provided that the shafts and rods are fitted with stuffing boxes where they pass through the gastight bulkheads. The access to a cargo pump room handling such liquids shall be from the open deck. (See § 32.60–20.)

(b) The electrical installation in a cargo pump room or in any enclosed space immediately adjoining cargo tanks on a tank vessel shall meet requirements in this section.

(c) Wiring is to be leaded and armored and shall be run through approved gastight fittings having stuffing glands at inlets and outlets.

(d) Joints in wiring shall be made only in wiring appliances, such as junction boxes, outlet boxes, etc., and such boxes shall be completely metallic and shall be gastight.

(e) Lighting fixtures shall be of approved type.

(f) Electric motors shall be of approved type either totally enclosed or ventilated to the atmosphere by suction and discharge air ducts. Separately ventilated motors are to have pressure type ventilation and shall be arranged with an automatic shutoff to open the circuit when the ventilating fan motor stops. The system is to be so interlocked that the pump motor cannot be started prior to a circulation of air. The air ducts are to lead to and from the atmosphere outside the pump room and are to terminate not less than 3 feet above the deck and not less than 6 feet from any cargo tank vent. (See § 32.60–20.)

CROSS REFERENCE: *See* drawing No. 3 in the Appendix.

32.65–25 Living quarters—TB/ALL. Partitions and sheathing shall be of approved fire-resistive construction.

32.65–30 Tank vessels with independent tanks—TB/ALL. Independent cargo tanks may be located in hold spaces or in other cargo tanks but in all cases a working space of at least 15 inches shall be provided around such independent tanks, or else provision shall be made for moving them to secure such space. When independent cargo tanks are located in an enclosed space other than a cargo tank, such enclosed space shall be considered as equivalent to a pump room, and shall be safeguarded as such, as required in the regulations in this subchapter.

32.65–35 Tank vessels carrying Grade A liquids—TB/ALL. Cargo tanks for Grade A liquids having a Reid vapor pressure in excess of 25 pounds shall be independent of the hull.

32.65–40 Construction and testing of cargo tanks and bulkheads—TB/ALL. (a) All cargo tanks to be vented at gage pressures of 4 pounds per square inch or less shall be constructed and tested as required by the requirements of the American Bureau of Shipping or other recognized classification society.

(b) All cargo tanks to be vented at gage pressures above 4 pounds per square inch shall be considered as unfired pressure vessels and shall meet the requirements for such vessels as to construction and testing, as set forth in Parts 52 to 57, inclusive, of Subchapter F (Marine Engineering) of this chapter.

(c) Gastight bulkheads shall be subjected to a thorough hose test.

SUBPART 32.70—HULL REQUIREMENTS FOR STEEL HULL TANK VESSELS CONSTRUCTED PRIOR TO NOVEMBER 10, 1936

32.70–1 Application—TB/ALL. All steel hull tank vessels, the construction or conversion of which was started prior to November 10, 1936, shall conform to the requirements in this subpart.

32.70–5 Hull requirements; general—TB/ALL. The scantlings, material, and workmanship, the subdivision of cargo spaces, the arrangement of cofferdams, the testing of tanks and cofferdams, shall be at least equivalent to the requirements of a recognized classification society for the particular service specified in the application for the certificate of inspection and permit for the transportation of liquid inflammable cargoes in bulk as of the date when the tank vessel was built or as of the date when the vessel was converted into a tank vessel. In the absence of such classification requirements, the Officer in Charge, Marine Inspection, shall satisfy himself that the vessel's structure as specified in this section is safe for the service to be specified in its certificate of inspection.

32.70–10 Cofferdams—TB/ALL. Tank vessels carrying Grade A, B, or C liquids shall be required to conform to the construction requirements in regard to vertical cofferdams in Section 32.65–15, except that a dry cargo compartment shall be considered to be equivalent to a cofferdam, and except as provided for in Section 32.70–20.

CROSS REFERENCE: *See* drawing No. 1 in the Appendix.

32.70–15 Pump rooms—TB/ALL. (a) Tank vessels handling Grade A, B, C, or D products shall meet the requirements for tank vessels in Section 32.65–20.

(b) The electrical installations in the pump rooms and enclosed spaces immediately adjoining cargo tanks (except in pump engine rooms as provided in Section 32.70–20) shall be made to comply with Subpart 32.45 and Section 32.65–20 to the extent that the changes required are, in the opinion of the Officer in Charge, Marine Inspection, necessary in the interest of safety.

CROSS REFERENCE: *See* drawing No. 5 in the Appendix.

32.70–20 Pump-engine compartment — TB/ALL. No cofferdam will be required between a cargo tank and a compartment containing pumping engines and their auxiliaries which are used exclusively during pumping operations, provided the pumping engine compartment contains no cargo valves and is well ventilated and provided further that internal combustion exhausts within the compartment are completely water jacketed or insulated and that gasoline engine intakes are fitted with effective flame arresters.

CROSS REFERENCE: *See* drawing No. 5 in the Appendix.

32.70–25 Cargo tanks—TB/ALL. Cargo tanks shall comply with the conditions specified in Sections 32.65–30 and 32.65–35, and shall pass the tests required in Section 32.65–40 (a), (b), (c): *Provided, however,* That less than 15 inches around such tanks may be accepted if in the judgment of the Officer in Charge, Marine Inspection, making the inspection, a satisfactory inspection of the cargo tanks and hull structure can be made.

SUBPART 32.75—HULL REQUIREMENTS FOR WOOD HULL TANK VESSELS CONSTRUCTED PRIOR TO NOVEMBER 10, 1936

32.75–1 Application — TB/ALL. All wood hull tank vessels, the construction or conversion of which was started prior to November 10, 1936, shall conform to the requirements in this subpart.

32.75–5 Hull requirements; general—TB/ALL. The scantlings, material, and workmanship, and the fitting and fastening of parts shall be at least equivalent to the requirements of a recognized classification society for the particular service specified in the application for certificate

of inspection and permit for the transportation of liquid inflammable cargoes in bulk as of the date when the tank vessel was built, or as of the date when the vessel was converted into a tank vessel. In the absence of such classification requirements, the Officer in Charge, Marine Inspection, shall satisfy himself that the vessel's structure as specified in this section is safe for the service to be specified in its certificate of inspection.

32.75–10 Cargo tanks—TB/ALL. Cargo tanks shall be independent of the wood hull, shall be made of steel or iron, and shall pass the tests required in Section 32.65–40 (a), (b). Where cargo tanks in wood hulls are not arranged to provide working space around them they shall be so constructed as to allow inspection of the hull, tanks, and bilges, and they shall be so installed that they can be moved to allow repairs to the hull structure and to themselves.

CROSS REFERENCE: *See* drawing No. 5 in the Appendix.

32.75–15 Electric bonding and grounding of tanks—TB/ALL. All independent cargo tanks in wood hull tank vessels shall be electrically bonded together with stranded copper cable of not less than No. 4 B and S gage and one end of this cable shall be grounded to a copper or brass plate of not less than 2 square feet in area and one-sixteenth inch in thickness and this plate shall be securely fastened to the hull, on the outside, at a point where it shall be covered by water when the tank vessel is unloaded.

32.75–20 Hold spaces and bulkheads—TB/ALL. In wood hull tank vessels containing independent cargo tanks for the transportation of Grade A, B, C, or D liquids, the hold spaces shall be considered as equivalent to a pump room and shall be safeguarded and ventilated as such as required by Section 32.65–20. Where the hold spaces contain equipment or operations which are sources of vapor ignition, such equipment or operations shall be isolated from other spaces by gastight bulkhead or, if it is impracticable to construct a gastight bulkhead, two structurally tight bulkheads without openings, separated by a well-ventilated air space 24 inches wide, where possible may be used.

CROSS REFERENCE: *See* drawing No. 5 in the Appendix.

SUBPART 32.80—TANK BARGES CONSTRUCTED OF MATERIALS OTHER THAN STEEL OR IRON

32.80–1 General requirements—B/ALL. All tank barges with hulls constructed of materials other than iron or steel, the construction or conversion of which was started prior to September 2, 1945, and to which certificates of inspection were issued prior to March 2, 1946, shall be considered the same as tank barges constructed prior to November 10, 1936.

PART 33—LIFESAVING APPLIANCES

SUBPART 33.01—GENERAL LIFESAVING REQUIREMENTS

Sec.

33.01-1 Inspection of lifesaving appliances—TB/ALL.
33.01-5 Construction of lifesaving equipment—TB/ALL.
33.01-15 Responsibility of master regarding lifesaving equipment—TB/ALL.
33.01-20 Approval for repairs and alterations—TB/ALL.
33.01-25 Factory inspection of lifesaving equipment—TB/ALL.
33.01-30 Approval of lifesaving appliances—TB/ALL.
33.01-35 Magazine chests for pyrotechnic equipment—T/ALL.

SUBPART 33.05—LIFEBOATS, LIFE RAFTS, AND BUOYANT APPARATUS REQUIRED

33.05-1 Lifeboats for tank ships; ocean; construction or conversion of which was started prior to November 19, 1952—T/O.
33.05-2 Lifeboats for tank ships; ocean; construction or conversion of which was started on or after November 19, 1952—T/O.
33.05-5 Lifeboats for barges; ocean—B/O.
33.05-10 Lifeboats for tank ships; coastwise; construction or conversion of which was started prior to November 19, 1952—T/C.
33.05-11 Lifeboats for tank ships; coastwise; construction or conversion of which was started on or after November 19, 1952—T/C.
33.05-15 Lifeboats for barges; coastwise—B/C.
33.05-20 Lifeboats and life rafts for tank vessels; Great Lakes—TB/L.
33.05-25 Lifeboats, life rafts, or buoyant apparatus for tank vessels; bays, sounds, lakes other than Great Lakes, and rivers—TB/BR.
33.05-30 Equipment for tank vessels on short voyages beyond certificated waters—TB/LB.
33.05-35 Wooden lifeboats prohibited on tank vessels—TB/ALL.

SUBPART 33.10—LIEFBOAT HANDLING EQUIPMENT REQUIREMENTS

33.10-1 Lifeboat davits—TB/ALL.
33.10-5 Lifeboat winches—TB/ALL.
33.10-10 Blocks and falls—TB/ALL
33.10-15 Disengaging apparatus—T/OC.
33.10-20 Disengaging apparatus—T/LBR and B/ALL.

SUBPART 33.15—EQUIPMENT FOR LIFEBOATS, LIFE RAFTS, OR BUOYANT APPARATUS

Sec.

33.15-1 Tank ship lifeboat equipment; ocean and coastwise—T/OC.
33.15-3 Portable radiotelegraph apparatus—T/OC.
33.15-5 Tank ship lifeboat equipment; Great Lakes—T/L.
33.15-10 Tank ship lifeboat equipment; bays, sounds, lakes other than Great Lakes, and rivers—T/BR.
33.15-15 Tank barge lifeboat equipment; all waters—B/ALL.
33.15-20 Tank ship life raft equipment; Great Lakes—T/L.
33.15-25 Tank vessel life raft equipment; bays, sounds, lakes other than Great Lakes, and rivers—TB/BR.
33.15-30 Tank vessel buoyant apparatus equipment; all waters—TB/ALL.

SUBPART 33.20—STOWAGE OF LIFEBOATS, LIFE RAFTS, AND BUOYANT APPARATUS

33.20-1 Davits and launching devices—TB/ALL.
33.20-5 Lifeboat davit falls—T/ALL.
33.20-10 Lifeboats and life rafts kept clear for launching—TB/ALL.
33.20-15 Stowage of lifeboats and life rafts—TB/ALL.

SUBPART 33.25—MARKINGS, CARE, AND INSPECTION

33.25-1 Preparation for voyage—TB/ALL.
33.25-5 Numbering and marking of lifeboats—TB/ALL.
33.25-10 Marking of life rafts—TB/ALL.
33.25-15 Overhaul—TB/ALL.
33.25-20 Maintenance—TB/ALL.

SUBPART 33.30—MANNING OF LIFEBOATS

33.30-1 Person in charge of each lifeboat—TB/OCLB.
33.30-5 Certificated lifeboatmen in each lifeboat—TB/OCLB.

SUBPART 33.35—LIFE PRESERVERS

33.35-1 Number required—TB/ALL.
33.35-5 Distribution and stowage—TB/ALL.
33.35-10 Shipboard inspections—TB/ALL.
33.35-15 Specifications for manufacturing life preservers—TB/ALL.

SUBPART 33.40—LIFE BUOYS

33.40-1 Number required on tank ships—T/ALL.
33.40-2 Number required on tank ships—T/OC.
33.40-5 Number required on tank barges—B/ALL.
33.40-10 Location, distribution, and securing of life buoys—TB/ALL.

SUBPART 33.45—DISTRESS LIGHTS

33.45-1 Distress signals—T/ALL and B/OC.
33.45-5 Parachute distress signals—T/OC.

SUBPART 33.50—SIGNALING LAMP

Sec.

33.50-1 Signaling lamp—T/OC.

SUBPART 33.55—LINE-THROWING APPLIANCES

33.55-1 Line-throwing appliances required—T/OC.

33.55-5 Accessibility—T/OC.

33.55-10 Equipment for line-throwing appliances—T/OC.

33.55-15 Service recommendations—T/OC.

AUTHORITY: Sections 33.01-1 to 33.55-15, inclusive, issued under R. S. 4405 and 4417a, as amended, and section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 391a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 33.01—GENERAL LIFESAVING REQUIREMENTS

Section 33.01-1 Inspection of livesaving appliances—TB/ALL. At each annual inspection and at any other time as required in the judgment of the Officer in Charge, Marine Inspection, all lifesaving appliances on the tank vessels shall be inspected.

33.01-5 Construction of lifesaving equipment—TB/ALL. All tank vessels subject to the regulations in this subchapter shall have lifeboats, disengaging apparatus, life rafts, life preservers, and all other lifesaving apparatus constructed in accordance with the regulations contained in the applicable subparts of Subchapter Q (Specifications) of this chapter: *Provided, however*, That all lifesaving apparatus which is of the character that complied with the rules and regulations of the Commandant, on vessels in existence at the time that the regulations in this subchapter are promulgated and have been in use on such vessels, may be continued in use so long as such existing lifesaving equipment and apparatus are found to be in good and workable condition. Where lifesaving equipment and apparatus are not found to be in good and workable condition, they shall be repaired or else replaced by lifesaving equipment and apparatus of the latest approved type, as required by the regulations in this subchapter and Subchapter Q (Specifications) of this chapter. Where lifesaving equipment and apparatus are found to be in good and workable condition but deficient as to quantity or numbers, the additional quantity or numbers required by the regulations in this subchapter shall be of the latest approved type.

33.01-15 Responsibility of master regarding lifesaving equipment—TB/ALL. It shall be the duty of the master or officer in charge to see that the lifeboats, life rafts, davits, falls, life preservers, and other lifesaving appliances are at all times ready for use.

33.01-20 Approval for repairs and alterations—TB/ALL. No extensive repairs or alterations, except in emergency, shall be made to any lifeboat, lifeboat disengaging apparatus, life preserver, life raft, or other appliance subject to inspection, without advance notice to the Officer in Charge, Marine Inspection. Such repairs and alterations shall so far as is practicable be made with materials and tested in the manner specified in this subchapter and applicable requirements in Subchapter Q (Specifications) of this chapter for new construction. . Emergency repairs or alterations shall be reported as soon as practicable to the Officer in Charge, Marine Inspection, where the vessel may call after such repairs are made; nor shall any lifeboat or life raft be reconditioned or used on a tank vessel other than that for which it was built, without notice to and supervision by the Officer in Charge, Marine Inspection, where such reconditioning or repairs are to be made.

33.01-25 Factory inspection of lifesaving equipment—TB/ALL. The Coast Guard District Commander where lifesaving apparatus is built shall detail an inspector to any place where lifeboats, life rafts, or buoyant apparatus are being built, who will inspect and examine carefully their construction and he shall satisfy himself that such lifeboats, life rafts, or buoyant apparatus are constructed in accordance with the drawings, or blueprints, and specifications furnished by the builders to the Coast Guard. When the inspector approves the construction of the lifeboat, life raft, or buoyant apparatus, he will stamp his initials, together with the letters "U. S. C. G." on a blank space on the plate required to be affixed to the unit by the builder. The initials of the inspector shall be satisfactory evidence to all parties interested that the unit has been constructed in accordance with the drawings, or blueprints, and specifications on file with the Coast Guard.

33.01-30 Approval of lifesaving appliances—TB/ALL. (a) Any type of lifeboat or life raft

approved by the Commandant shall be considered as equivalent to the standard lifeboat or life raft.

(b) Lifeboats shall be of an approved type and constructed in accordance with Subpart 160.035 of Subchapter Q (Specifications) of this chapter.

(c) Life rafts shall be of an approved type and constructed in accordance with Subpart 160.018 of Subchapter Q (Specifications) of this chapter.

(d) Buoyant apparatus shall be of an approved type and constructed in accordance with Subpart 160.010 of Subchapter Q (Specifications) of this chapter.

33.01–35 Magazine chests for pyrotechnic equipment—T/ALL. Tank ships required to carry pyrotechnic distress signals or line-throwing appliances shall be provided with a portable magazine chest. (See Subpart 160.038, portable magazine chests, of Subchapter Q (Specifications) of this chapter.) Magazine chests shall be secured above the freeboard deck away from heat. Stowage in enclosed spaces or adjacent to cargo tanks is prohibited.

SUBPART 33.05—LIFEBOATS, LIFE RAFTS, AND BUOYANT APPARATUS REQUIRED

33.05–1 Lifeboats for tank ships; ocean; construction or conversion of which was started prior to November 19, 1952—T/O. (a) All tank ships which normally operate more than 20 miles offshore shall carry a sufficient number of lifeboats on each side to accommodate all persons on board: *Provided*, That such tank ships of 350 feet in length or over, having superstructure amidships and propelling machinery aft shall be provided with at least four lifeboats, one on each side in way of the after accommodations, and one on each side in way of amidship accommodations.

(b) No lifeboat shall be of less than 180 cubic feet measurement.

33.05–2 Lifeboats for tank ships; ocean; construction or conversion of which was started on or after November 19, 1952—T/O. (a) All tank ships which normally operate more than 20 miles offshore shall carry a sufficient number of lifeboats on each side to accommodate all persons on board: *Provided*, That such tank ships of 3,000 gross tons and over, having superstructure amidships and propelling machinery aft shall be provided with at least four lifeboats, one on each side in way of the after accommodations, and one on each side in way of amidship accommodations.

(b) No lifeboat shall be less than 24 feet in length, except where owing to the size of the tank ship, or for other reasons, the Commandant may permit smaller lifeboats, but in no case shall they be less than 16 feet in length.

(c) All tank ships of 1,600 gross tons and over on an international voyage shall carry at least one motor-propelled or hand-propelled lifeboat.

33.05–5 Lifeboats for barges; ocean—B/O. (a) All tank barges which normally operate more than 20 miles offshore shall carry a sufficient number of lifeboats to accommodate all persons on board.

(b) No lifeboat shall be of less than 125 cubic feet measurement.

33.05–10 Lifeboats for tank ships; coastwise; construction or conversion of which was started prior to November 19, 1952—T/C. (a) All tank ships which normally operate 20 miles or less offshore shall carry a sufficient number of lifeboats on each side to accommodate all persons on board.

(b) No lifeboat shall be of less than 180 cubic feet measurement, except by approval of the Commandant.

33.05–11 Lifeboats for tank ships; coastwise; construction or conversion of which was started on or after November 19, 1952—T/C. (a) All tank ships which normally operate 20 miles or less offshore shall meet the requirements of Section 33.05–2 of this subpart.

33.05–15 Lifeboats for barges; coastwise—B/C. (a) All tank barges which normally operate 20 miles or less offshore shall carry a sufficient number of lifeboats to accommodate all persons on board.

(b) No lifeboat on a tank barge of 100 gross tons or over shall be of less than 125 cubic feet measurement, except by approval of the Commandant. No lifeboat on a tank barge of less than 100 gross tons shall be of less than 90 cubic feet measurement, except by approval of the Commandant.

33.05–20 Lifeboats and life rafts for tank vessels; Great Lakes—TB/L. (a) All tank vessels operating on the waters of the Great Lakes

shall carry a sufficient number of lifeboats to accommodate all persons on board.

(b) No lifeboat on a tank vessel of 100 gross tons or over shall be of less than 90 cubic feet measurement, except by approval of the Commandant. No lifeboat on a tank vessel of less than 100 gross tons shall be of less than 60 cubic feet measurement.

(c) All tank ships of 300 gross tons and over, operating on the waters of the Great Lakes, shall carry in addition to their lifeboat equipment, one approved and fully equipped life raft of suitable size, with one electric water light; the raft to be stowed in a manner to allow same to float clear in the event of sinking of the vessel: *Provided, however*, That all tank ships of 300 gross tons or over operating on the waters of the Great Lakes which are equipped with lifeboats in accordance with Section 33.05-1 or Section 35.05-10 shall be exempt from this requirement. The electric water light need not be attached to the raft, but when the electric water light is not attached to the raft, a snap hook shall be provided for this purpose.

33.05-25 Lifeboats, life rafts, or buoyant apparatus for tank vessels; bays, sounds, lakes other than Great Lakes, and rivers—TB/BR. (a) All tank vessels operating exclusively on bays, sounds, lakes (other than the Great Lakes), rivers, harbors, or inland waters tributary to the Gulf of Mexico, shall carry lifeboats, life rafts, or buoyant apparatus of sufficient number to accommodate all persons on board.

(b) No lifeboat shall be of less than 60 cubic feet measurement.

(c) The minimum size of any piece of buoyant apparatus shall be such as to accommodate at least five persons.

33.05-30 Equipment for tank vessels on short voyages beyond certificated waters—TB/LB. (a) The Officer in Charge, Marine Inspection, may issue permits to tank vessels of less than 100 gross tons which are certificated for lake, bay, and sound routes, to engage on short voyages to points beyond such waters, but not more than 15 miles from the port of refuge: *Provided*, That such vessels are equipped with a sufficient number of lifeboats, life rafts, or buoyant apparatus to accommodate all persons on board.

(b) No lifeboat shall be of less than 60 cubic feet measurement. The minimum size of any life raft or piece of buoyant apparatus shall be such as to accommodate at least five persons.

33.05-35 Wooden lifeboats prohibited on tank vessels—TB/ALL. Lifeboats installed on tank vessels after September 1, 1943, shall be constructed of metal.

SUBPART 33.10—LIFEBOAT HANDLING EQUIPMENT REQUIREMENTS

33.10-1 Lifeboat davits—TB/ALL. (a) No type or make of mechanical or gravity davit shall be used unless it has first been approved by the Commandant. For construction of davits see Subpart 160.032 of Subchapter Q (Specifications) of this chapter.

(b) No mechanical davits of a character which require manual or other power to turn the lifeboats out to the position for lowering into the water shall be fitted to any vessel the keel of which is laid after September 1, 1941, if such davits are to handle a lifeboat which, without its complement of persons on board, but having on board all air tanks and other lifeboat equipment, exceeds 5,000 pounds total weight; i. e., 2,500 pounds for a single davit arm.

(c) Davits, which are capable of swinging the boats into the lowering position without the application of any effort or external force other than that necessary to operate the releasing mechanism, allowing the lifeboat to move from the stowed position to the lowering position by the force of gravity, shall be provided to handle all lifeboats the total weight of which, including air tanks and lifeboat equipment, but without the complement of persons on board, exceeds 5,000 pounds.

(d) No davit arm or frame comprising mechanical or gravity davits shall be placed on board any vessel until all the requirements of this section and Subpart 160.032 of Subchapter Q (Specifications) of this chapter have been met.

(e) Whenever mechanical or gravity davits or parts of davits, such as davit arms, or frames, are installed on vessels, to take the place of davits, davit arms, or frames which have been damaged or broken, such davits or frames shall have the manufacturer's name plate affixed thereto.

33.10–5 Lifeboat winches—TB/ALL. (a) When lifeboat winches are installed on tank vessels, wire falls shall be provided for each set of davits.

(b) On tank ships of 500 gross tons and over in ocean or coastwise service, construction or conversion of which is started on or after November 19, 1952, lifeboat winches shall be provided for all lifeboats, where the deck on which the lifeboats are carried exceeds 20 feet from the lightest seagoing draft.

(c) Lifeboat winches proposed for use in new installations shall be of an approved type and constructed in accordance with Subpart 160.015 of Subchapter Q (Specifications) of this chapter.

(d) Suitable fabric covers shall be provided, so fitted over exposed mechanisms that ice formations may be readily broken adrift when necessary to operate the lifeboat winch.

(e) Installation: Lifeboat winches shall be so located that the operator can observe the movement of the lifeboat during the lowering operation. The lead of the falls to the lifeboat winch shall be in accordance with Section 33.10–10 (g).

(f) Tests: Upon completion of the installation of all lifeboat winches, and before the vessel is certificated for service, the following tests and examinations shall be made in the presence of an inspector:

(1) Swing lifeboat out from chocks and lower to level for loading, at which point the lifeboat shall be loaded with dead weight equivalent to the number of persons allowed (165 pounds per person) together with weight of equipment, plus 10 percent of the total load. The lifeboat should then be lowered to the water, stopping at approximately 6-foot intervals by action of the counterweight alone. During the test the following observations should be made:

(i) Brake action shall be smooth, but positive. Brakes exposed to the weather shall also be tested under the load lowering condition with the braking surface wetted.

(ii) Counterweight shall be capable of stopping and holding the lifeboat when released.

(iii) The lifeboat winch shall be capable of controlling the speed of lowering of the fully equipped lifeboat with its complement of persons on board to not more than 120 feet per minute. In addition, the speed of lowering of the fully equipped lifeboat without its complement of persons shall be not less than 40 feet per minute.

(iv) No part of lowering gear shall show any distress under load.

(v) Deck under lifeboat winch and davits must be of sufficient strength to prevent any undue stress of the deck under load.

(vi) Mechanical davits shall swing to extreme outboard position without slacking the lifeboat winch brake.

(vii) Action of governor brake and lowering speed permitted by same should be noted.

(viii) Determine that falls are of sufficient length to lower to light load line with vessel listed 15 degrees either way.

(2) A report of the results of the installation test covering all the above points shall be recorded.

33.10–10 Blocks and falls—TB/ALL. Blocks and falls installed after May 1, 1942, shall conform to the following requirements:

(a) All blocks, falls, fairleads, padeyes, fastenings, etc., used in connection with lifeboat gear shall be designed with a minimum factor of safety of six, based on the maximum working load.

(b) Where lifeboat winches are installed, not more than two-part wire falls shall be used, except in specific cases where three-part wire falls may be accepted. Where lifeboat winches are not used, the falls shall be of manila rope or equivalent but wire rope may not be used.

(c) Wire rope falls of 6 x 19 regular lay filler wire construction prelubricated at the factory with suitable neutral wire rope lubricant shall be accepted as standard. Any other type of wire superior or equally as good as the minimum standard specified may be used.

(d) Falls shall be of such length that the lifeboat may be lowered to the water at the lightest seagoing draft with the vessel listed to 15 degrees.

(e) All ocean and coastwise vessels and all other vessels of over 1,000 gross tons, not fitted with lifeboat winches, shall be provided with covered tubs, boxes, or reels for stowage of falls and with suitable lowering bitts in easily accessible positions; except that all ocean and coastwise, self-propelled vessels of over 1,000 gross tons, not fitted with lifeboat winches for which contracts for con-

struction are let on or after September 2, 1945, shall be fitted with cruciform bitts in such position as will render lowering practicable.

(f) Where more than one lifeboat is served by the same set of davits, if the falls are of manila rope, separate falls shall be provided to serve each lifeboat.

(g) Such blocks as are necessary to allow the falls to lead fair in all positions of the davit shall be fitted. Sheaves for wire rope shall have a diameter at the base of the groove at least equal to 12 times the diameter of the rope.

(h) There shall be ample clearance between the cheeks of blocks in which manila rope is used. The width between the cheeks shall be half an inch greater than the diameter of new ropes when those ropes are 3¾ inches in circumference or greater; blocks for smaller ropes shall be designed with clearance in the same proportion.

(i) Means for lubrication shall be provided for all moving parts of blocks.

(j) Where lifeboat winches are provided on tank vessels, construction or conversion of which was started prior to November 19, 1952, there shall be at least 8 feet between the center of the drum and the center of the nearest sheave.

(k) Where lifeboat winches are provided on tank vessels, construction or conversion of which is started on or after November 19, 1952, the lead sheaves to the drums shall be so located as to provide fleet angles of not more than 8 degrees for grooved drums and not more than 4 degrees for nongrooved drums. By fleet angle is meant the angle included between an imaginary line from the lead sheave perpendicular to the axis of the drum and the line formed by the wire rope when lead from the lead sheave to either extremity of the drum.

33.10-15 Disengaging apparatus — T/OC. (a) Lifeboats on ocean and coastwise tank ships shall be fitted with suitable disengaging apparatus. Mechanical disengaging apparatus, if fitted, shall be of an approved type and constructed in accordance with Subpart 160.033 of Subchapter Q (Specifications) of this chapter.

(b) Where lifeboats on ocean or coastwise tank ships of over 3,000 gross tons, the construction or conversion of which is started on or after July 1, 1951, are fitted with mechanical disengaging apparatus, such apparatus shall be so arranged as to make it possible for the lifeboats to be launched while such vessels are under way or stopped, and for both ends of the lifeboat to be released simultaneously, under tension, by one person. The gears shall be capable of being released from one position in the lifeboat while the boat is fully loaded with allowed persons and equipment. Simultaneous release shall be effected by partially rotating a shaft which shall be continuous and extend from point of contact with the hooks.

(c) Replacements to equipment on ocean or coastwise tank ships of over 3,000 gross tons, the construction or conversion of which was started prior to July 1, 1951, shall comply with the requirements of Paragraph (b) of this section if the lifeboat being replaced is fitted with mechanical disengaging apparatus.

33.10-20 Disengaging apparatus — T/LBR and B/ALL. Lifeboats shall be fitted with suitable disengaging apparatus. Mechanical disengaging apparatus shall be of a type approved by the Commandant. Not more than one type of releasing gear shall be fitted in the lifeboats of a particular vessel unless otherwise approved by the Commandant.

SUBPART 33.15—EQUIPMENT FOR LIFEBOATS, LIFE RAFTS, OR BUOYANT APPARATUS

33.15-1 Tank ship lifeboat equipment; ocean and coastwise—T/OC—(a) General. All lifeboats on tank ships operating on ocean or coastwise routes shall be equipped as set forth in this section. All items other than boathooks shall be stowed in lockers or be suitably lashed to the lifeboat. The stowage shall be such as not to interfere with the releasing gear or impede entry into the lifeboat.

(b) Bailer. One bailer of sufficient size and suitable for bailing, with lanyard attached.

(c) Boathooks. Two boathooks of clear-grained white ash of suitable length, but not less than 8 feet by 1½ inches in diameter.

(d) Buckets. Two galvanized iron buckets of about 2 gallons each, with lanyards attached.

(e) Compass and mounting. One efficient liquid compass with not less than a 2-inch card. On and after January 1, 1946, all compasses and mountings for new installations or replacements

shall be of an approved type. The Coast Guard specification for such approved type, which requires a card of not less than 3¾ inches in diameter, will be made available upon request.

(f) Distress signals. Twelve approved hand red flare distress signals in a watertight container, and 2 approved floating orange smoke distress signals. Service use shall be limited to a period of 3 years from date of manufacture. Distress signals not bearing date of manufacture shall not be carried. For specifications for the above signals, see Subparts 160.021, 160.022, and 160.023 of Subchapter Q (Specifications) of this chapter. In lieu of the required floating orange smoke distress signals, either 12 approved hand orange smoke distress signals or 12 approved combination flare and smoke distress signals constructed in accordance with Subpart 160.023 or 160.037 of Subchapter Q (Specifications) of this chapter, may be substituted, provided such signals were installed prior to November 19, 1952. The service use of this equipment shall be limited to 3 years from date of manufacture, whereupon it shall be replaced with the required floating orange smoke signals.

(g) Ditty bag. One canvas bag containing sailmaker's palm, needles, sail twine, marline, and marlinspike.

(h) Drinking cup. One enameled drinking cup, with ⅛-inch diameter cotton lanyard, 3 feet in length.

(i) Flashlight. One approved type I, size No. 3 flashlight together with 3 spare cells (or one 3-cell battery) and 2 spare bulbs. A flashlight which obtains its source of energy from other than dry cells may be used provided such flashlight has been approved by the Commandant. For specifications for flashlights, see Subpart 161.008 of Subchapter Q (Specifications) of this chapter. No battery cell shall remain in the flashlight beyond the serviceability date appearing on the cell or its jacket. Approved flashlights not conforming to the requirements in Subpart 161.008 of Subchapter Q (Specifications) of this chapter may be continued in service so long as they are in good and serviceable condition.

(j) Hatchets. Two hatchets attached to the lifeboat by individual lanyards and readily available for use, one at each end of the lifeboat. All hatchets provided for use on tank ships shall be of an approved type. For specifications for hatchets, see Subpart 160.013 in Subchapter Q (Specifications) of this chapter. Hatchets provided prior to December 1, 1944, may be continued in service so long as they are in good and serviceable condition.

(k) Illuminating oil. One gallon illuminating oil in metal container.

(l) Lantern. One lantern containing sufficient oil to burn at least 9 hours and ready for immediate use.

(m) Life line. A life line, or grab line, properly secured the entire length of each side festooned in bights not longer than 3 feet, with a seine float in each bight. The life line shall be of a size and strength not less than 12-thread manila rope, and the seine float in each bight shall hang to within 12 inches of the surface of the water when the lifeboat is light.

(n) Life preservers. Two life preservers of an approved type. These life preservers are in addition to the vessel's equipment of life preservers.

(o) Locker. A suitable locker or box for the storage and preservation of the small items of equipment.

(p) Mast and sails. A mast or masts with at least one good sail, colored India Orange (Cable No. 70072, Standard Color Card of America), and proper gear for each, the sail and gear to be protected by a suitable canvas cover. Galvanized wire rope or equivalent corrosion resistant metal stays shall be used. A mast and sail is not required on hand-propelled or motor-propelled lifeboats. On tank ships the construction or conversion of which was started prior to November 19, 1952, masts, sails, and accompanying gear for lifeboats may be retained so long as they are in good condition. Any replacements shall meet the applicable provisions of this paragraph.

(q) Matches. Two boxes of safety matches in a watertight container, and carried in a box secured to the underside of the stern thwart, or stowed in locker.

(r) Oars. (1) A single banked complement of oars, two spare oars, and a steering oar with a rowlock or becket, conforming to the requirements in Table 33.15–1 (r).

(2) Motor lifeboats and lifeboats fitted with propellers operated by hand shall be equipped with 4 oars and 1 steering oar.

(s) Painter. Two painters of manila rope not less than 2¾ inches in circumference and a length not less than 3 times the distance between the boat deck and the light draft. One shall have a long eye splice and be attached to the foot with a toggle, so that it can be released and the other shall be firmly secured to the stem of the lifeboat and be ready for use.

(t) Parachute flare distress signals. Twelve approved parachute red flare distress signals and an approved means of projecting them, all contained in a portable watertight case; or 12 approved hand-held rocket-propelled parachute red flare distress signals contained in a portable watertight container. Service use of the signals shall be limited to a period of 3 years from date of manufacture. For specifications for the above equipment, see Subparts 160.024, 160.028, and 160.036 of Subchapter Q (Specifications) of this chapter.

TABLE 33.15–1 (r)

Length of lifeboat, feet		Number of oars		Length of oars, feet	
Over	Not over	Rowing	Steering	Rowing	Steering
--	15	4	1	8	9
15	19	6	1	10	11
19	21	6	1	11	12
21	23	6	1	12	13
23	25	8	1	13	14
25	27	8	1	14	15
27	--	8	1	15	16

(u) Plugs and pumps. Each drain hole, fitted with an automatic plug, shall be provided with one cap attached by chain to the lifeboat. Where an automatic plug is not provided, there shall be two plugs to each drain hole attached to the lifeboat by separate chains. Decked lifeboats shall have no plug hole but shall be provided with at least two bilge pumps.

(v) Propellers (hand-operated). Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motor lifeboats, having a capacity of 60 or more persons shall be fitted with a hand-operated propeller of an approved type. For construction of hand-propelling gear see Subpart 160.034 of Subchapter Q (Specifications) of this chapter. The hand-propelling gear shall be required in all such lifeboats fitted on new tank ships or as replacements of such lifeboats.

(w) Provisions. Two pounds of provisions for each person consisting of hard bread or its equivalent in any approved emergency ration of cereal or vegetable compound. It shall be packaged in hermetically sealed containers of an approved type and stowed in provision lockers or other compartments providing suitable protection. No meat or other ration requiring saline preservative shall be allowed. In addition, there shall be one pound of condensed milk for each person, stowed in provision lockers or other compartments providing suitable protection.

(x) Rowlocks. One set and a half of rowlocks or thole pins attached to the lifeboat by separate chains.

(y) Rudder. One rudder and tiller. For construction of rudder and tiller see § 160.035–3 (t) of Subpart 160.035 of Subchapter Q (Specifications) of this chapter.

(z) Sea anchor. One sea anchor of an approved type. Sea anchors installed prior to January 1, 1944, meeting the requirements of regulations effective at the time of installation may be continued in use so long as they are in good and serviceable condition.

(aa) Signaling mirrors. Two signaling mirrors of an approved type.

(bb) Storm oil. One container holding 1 gallon of vegetable or animal oil, so constructed that the oil can be easily distributed on the water and so arranged that it can be attached to the sea anchor.

(cc) Drinking water. For each person at least 3 quarts of drinking water contained in hermetically sealed cans of an approved type and stowed in the drinking water tanks, lockers, or other compartments providing suitable protection.

(dd) First-aid kit. One first-aid kit of an approved type, constructed and fitted in accordance with Subpart 160.041 of Subchapter Q (Specifications) of this chapter.

(ee) Jackknife. One approved jackknife, constructed in accordance with Subpart 160.043 of Subchapter Q (Specifications) of this chapter.

(ff) Heaving line. Two heaving lines of adequate strength, 10 fathoms in length, and one inch in circumference. They shall be of such quality as to be buoyant after 24 hours submergence.

(gg) Bilge pump. One approved bilge pump constructed in accordance with Subpart 160.044 of Subchapter Q (Specifications) of this chapter. They shall be of a size noted in Table 33.15-1 (gg) depending upon the cubic capacity of the lifeboat as determined by the six-tenths rule:

TABLE 33.15-1(gg)

Capacity of lifeboat, cubic feet		Bilge pump size
Over	Not over	
---	330	1
330	700	2
700	---	3

(hh) Ladders, lifeboat gunwale. All lifeboats approved to carry 60 or more persons shall be fitted with a suitable gunwale ladder consisting of three flat wood steps cut out for handholds. The steps shall be spaced 12 inches apart and fastened with ⅝-inch diameter manila rope. Each rope end shall be tied inside the lifeboat at about amidships with the ladder stowed on top of the side benches and ready for immediate use. Other suitable devices may be specifically approved.

(ii) Grab lines. Unless other approved means are provided to achieve the same purpose, three ½ inch manila grab lines shall be fitted extending from gunwale to gunwale under the keel to enable persons to cling to and climb upon an upturned lifeboat. The ends of each grab line shall be securely attached to the side benches or other permanent part of the lifeboat and each grab line shall be made up with figure eight knots spaced approximately 18 inches apart in order to provide hand grips. Means shall be provided for taking up any slack in the grab lines.

33.15-3 Portable radiotelegraph apparatus—T/OC. All tank ships of 500 gross tons and over on an international voyage shall be provided with a portable radiotelegraph apparatus complying with the requirements of the Federal Communications Commission. The apparatus shall be kept in the radio room, or the chart room, or other suitable location and shall be immediately available for placement in one of the lifeboats.

33.15-5 Tank ship lifeboat equipment; Great Lakes—T/L. All lifeboats on tank ships operating on the Great Lakes shall carry the following equipment:

(a) Bailer. One bailer with lanyard attached.

(b) Boathook. One boathook attached to a staff of suitable length.

(c) Bucket. One galvanized iron bucket with lanyard attached.

(d) Compass. One efficient liquid compass with not less than a 2-inch card.

(e) Distress signals. (1) Twelve approved hand red flare distress signals in a watertight container, or twelve approved hand combination flare and smoke distress signals in a watertight container. Service use shall be limited to a period of three years from date of manufacture. Distress signals not bearing date of manufacture shall not be carried. For specifications for the above signals, see Subparts 160.021 and 160.023 of Subchapter Q (Specifications) of this chapter.

(2) Either an approved flashlight or twelve approved parachute red flare distress signals, and an approved means of projecting them, all contained in a portable watertight case, may be substituted for six of the above distress signals, but at least six of the above hand red flare distress signals or hand combination flare and smoke distress signals shall be carried. Service use of the signals shall be limited to a period of three years from date of manufacture. For specifications for the parachute red flare distress signal equipment, see Subparts 160.024 and 160.036 of Subchapter Q (Specifications) of this chapter.

(f) Flashlight. One approved type I, size No. 3, flashlight. A flashlight which obtains its source of energy from other than dry cells may be used provided such flashlight has been approved by the Commandant. For specifications for flashlights see Subpart 161.008 of Subchapter Q (Specifications) of this chapter. No battery cell shall remain in the flashlight beyond the serviceability date appearing on the cell or its jacket. Approved flashlights not conforming to the requirements in Subpart 161.008 of Subchapter Q (Specifications) of this chapter may be continued

in service so long as they are in good and serviceable condition.

(g) Hatchets. Two hatchets attached to the lifeboat by individual lanyards and readily available for use, one at each end of the lifeboat. All hatchets provided for use on tank ships shall be of an approved type. For specification for hatchets see Subpart 160.013 of Subchapter Q (Specifications) of this chapter. Hatchets provided prior to December 1, 1944, may be continued in service so long as they are in good and serviceable condition.

(h) Illuminating oil. One can containing 1 gallon of illuminating oil.

(i) Lantern. One lantern containing sufficient oil to burn at least 9 hours, and ready for immediate use.

(j) Life line. A properly secured life line the entire length of each side, festooned in bights not longer than 3 feet, with a seine float in each bight. The life line shall be of a size and strength not less than 12-thread manila rope, and the seine float in each bight shall hang to within 12 inches of the surface of the water when the lifeboat is light.

(k) Life preservers. Two life preservers of an approved type.

(l) Matches. One box of safety matches wrapped in a waterproof package and carried in a box secured to the underside of the stern thwart.

(m) Oars. A full complement of oars and two spare oars, and a steering oar with rowlock or becket.

(n) Painter. One painter or manila rope of not less than 2¾ inches in circumference and of suitable length.

(o) Parachute flare distress signals. Optional, see *distress signals.*

(p) Plugs. Each drain hole, fitted with an automatic plug, shall be provided with one cap attached by chain to the lifeboat. Where an automatic plug is not provided, there shall be two plugs to each drain hole attached to the lifeboat by separate chains.

(q) Propellers (hand-operated). Lifeboats may be fitted with a hand-operated propeller of an approved type, but all lifeboats, except motor lifeboats, having a capacity of 60 or more persons, shall be fitted with a hand-operated propeller of an approved type. For construction of hand-propelling gear see Subpart 160.034 of Subchapter Q (Specifications) of this chapter.

(r) Rowlocks. One set and a half of rowlocks or thole pins, attached to the lifeboat by separate chains.

(s) Rudder. One rudder and tiller. For construction of rudder and tiller, see Section 160.035–3 (t) of Subpart 160.035 of Subchapter Q (Specifications) of this chapter.

(t) Sea anchor. One sea anchor of an approved type. Sea anchors installed prior to January 1, 1944, meeting the requirements of the regulations effective at the time of installation may be continued in use so long as they are in good and serviceable condition.

(u) Storm oil. A vessel containing 1 gallon of vegetable or animal oil so constructed that the oil can be easily distributed on the water and so arranged that it can be attached to the sea anchor.

(v) Stowage of equipment. All loose equipment shall be securely attached to the lifeboat to which it belongs. The stowage of parachute flare distress signals is discretionary with the master.

33.15–10 Tank ship lifeboat equipment; bays, sounds, lakes other than Great Lakes, and rivers—T/BR. All lifeboats on tank vessels operating lakes, bays, sounds, and rivers, shall carry the following equipment:

(a) Boathook. One boathook attached to staff of suitable length.

(b) Bucket. One bucket with lanyard attached.

(c) Hatchets. Two hatchets attached to the lifeboat by individual lanyards and readily available for use, one at each end of the lifeboat. All hatchets provided for use on tank ships shall be of an approved type. For specification for hatchets see Subpart 160.013 of Subchapter Q (Specifications) of this chapter. Hatchets provided prior to December 1, 1944, may be continued in service so long as they are in good and serviceable condition.

(d) Lantern. One lantern containing sufficient oil to burn at least 9 hours and ready for immediate use.

(e) Life line. A properly secured life line the entire length on each side, such line to be festooned in bights not longer than 3 feet, with a seine float in each bight. The life line shall be of a size and strength not less than 12-thread manila

rope, and the seine float in each bight shall hang to within 12 inches of the surface of the water when the boat is light.

(f) Life preservers. At least two life preservers of an approved type except on tank vessels operating exclusively on rivers flowing into the Gulf of Mexico, where one only is required. Wooden floats may be substituted where the same are allowed by law.

(g) Matches. One box of safety matches wrapped in a waterproof package and carried in a box secured to the underside of the stern thwart.

(h) Oars. (1) A full complement of single bank oars and two spare oars of suitable length except on tank ships operating exclusively on rivers flowing into the Gulf of Mexico, where a total of five oars only is required.

(2) One steering oar with rowlock or becket except on tank ships operating exclusively on rivers.

(i) Painter. One painter of manila rope of not less than 2¾ inches in circumference, properly attached, and of suitable length.

(j) Plugs. Each drain hole, fitted with an automatic plug, shall be provided with one cap attached by chain to the lifeboat. Where an automatic plug is not provided, there shall be two plugs to each drain hole attached to the lifeboat by separate chains.

(k) Rudder. One rudder and tiller except for tank ships operating exclusively on rivers. For construction of rudder and tiller, see Section 160.035–3 (t), in Subpart 160.035 in Subchapter Q (Specifications) of this chapter.

(l) Rowlocks. A full complement of rowlocks and 2 spare rowlocks, each rowlock to be attached to the lifeboat with a separate chain.

(m) Stowage of equipment. All loose equipment shall be securely attached to the lifeboat to which it belongs.

33.15–15 Tank barge lifeboat equipment; all waters—B/ALL. Lifeboats on barges shall be equipped as follows:

(a) Boathooks. Two boathooks of suitable length.

(b) Bucket. One galvanized iron bucket of about 2-gallon capacity with lanyard attached.

(c) Lantern. One lantern containing sufficient oil to burn at least 9 hours and ready for immediate use.

(d) Life line. One life line properly secured the entire length on each side, festooned in bights not longer than 3 feet with a seine float in each bight.

(e) Life preservers. Two life preservers of an approved type in addition to the vessel's complement of life preservers.

(f) Matches. One box of safety matches wrapped in a waterproofed package, in a watertight container secured to the underside of the stern thwart.

(g) Oars. Four oars and one steering oar with rowlock or becket.

(h) Painter. One painter of manila rope not less than 2¾ inches in circumference, and of a suitable length.

(i) Plugs. Each drain hole, fitted with an automatic plug, shall be provided with one cap attached by chain to the lifeboat. Where an automatic plug is not provided, there shall be two plugs to each drain hole attached to the lifeboat by separate chains.

(j) Rowlocks. Not less than four rowlocks attached to the lifeboat by separate chains.

(k) Stowage of equipment. All loose equipment shall be securely attached to the lifeboat to which it belongs.

33.15–20 Tank ship life raft equipment; Great Lakes—T/L. Life rafts shall be equipped as follows:

(a) Boathook. One boathook on a suitable staff.

(b) Distress signals. Twelve approved hand red flare distress signals in a watertight container, or twelve approved hand combination flare and smoke distress signals in a watertight container. Service use shall be limited to a period of three years from date of manufacture. Distress signals not bearing date of manufacture shall not be carried. For specifications for the above signals, see Subparts 160.021 and 160.023 in Subchapter Q (Specifications) of this chapter.

(c) Life line. One life line properly secured entirely around the sides and ends of the raft, festooned in bights not longer than 3 feet with seine floats in each bight.

(d) Matches. One box of safety matches in a watertight container.

(e) Oars. Four oars.

(f) Painter. One painter of manila rope not less than 2¾ inches in circumference, and of a length not less than three times the distance between the boat deck and the light draft.

(g) Rowlocks. Five rowlocks attached by separate chains.

(h) Sea anchor. One sea anchor constructed of good quality canvas or other satisfactory material; and, if of circular pattern, to be not less than 2 feet in diameter.

(i) Water light. One automatic electric water light of an approved type. For specification for water lights see Subpart 161.001 of Subchapter Q (Specifications) of this chapter.

(j) Storm oil. One container holding 1 gallon of vegetable or animal oil so constructed that the oil can be easily distributed on the water, and so arranged that it can be attached to the sea anchor.

33.15-25 Tank vessel life raft equipment; bays, sounds, lakes other than Great Lakes, and rivers—TB/BR. Life rafts shall be equipped as follows:

(a) Boathook. One boathook on a suitable staff.

(b) Life line. One life line properly secured entirely around the sides and ends of the life raft, festooned in bights not longer than 3 feet with seine floats in each bight.

(c) Oars. Four oars.

(d) Painter. One painter of manila rope not less than 2¾ inches in circumference, and of a length not less than three times the distance between the boat deck and the light draft.

(e) Rowlocks. Five rowlocks attached by separate chains.

33.15-30 Tank vessel buoyant apparatus equipment; all waters—TB/ALL. Buoyant apparatus shall be fitted and equipped as follows:

(a) Life line. One life line properly secured entirely around the sides and ends of the buoyant apparatus, festooned in bights not longer than 3 feet with seine float in each bight.

(b) Painter. (1) One painter of sufficient strength properly secured to the buoyant apparatus so that the buoyant apparatus may be lowered from the deck where stored to the water. It shall be of good quality manila rope not less than 2 inches in circumference and at least equal in length to the height of the boat deck where stored to the vessel's light seagoing draft plus 6 feet.

(2) Buoyant apparatus weighing less than 75 pounds shall not be required to have a painter for lowering.

(c) Water light. One automatic electric water light of an approved type. Buoyant apparatus designed to accommodate less than 25 persons shall not be required to be equipped with an automatic electric water light.

SUBPART 33.20—STOWAGE OF LIFEBOATS, LIFE RAFTS, AND BUOYANT APPARATUS

33.20-1 Davits and launching devices—TB/ALL. (a) Tank ships of 100 gross tons or more shall be equipped with davits for each lifeboat carried. Only approved mechanical or gravity davits may be installed on such ships constructed on or after November 19, 1952.

(b) Tank ships of less than 100 gross tons and tank barges where lifeboats are carried shall provide means for the launching of such lifeboats by davits or crane or, where the freeboard is less than 6 feet when the vessel has no cargo aboard, by slide.

(c) On all tank ships of 500 gross tons and over in ocean and coastwise service, the following conditions shall be met:

(1) An approved ladder, constructed in accordance with Subpart 160.017 of Subchapter Q (Specifications) of this chapter shall be provided at each set of davits to afford access to the lifeboats when waterborne.

(2) Two lifelines shall be fitted to the davit spans of such length as to reach the water with the vessel at its lightest seagoing draft and listed 15 degrees either way.

(3) On tank ships on an international voyage, suitable means shall be provided for illuminating the launching gear and the lifeboats during the process of launching the lifeboats from the stowed position until they are waterborne.

(4) Where applicable, means shall be provided outside the machinery space to prevent the discharge of water into the lifeboats while they are being lowered. This shall consist of baffles to de-

fleet the water down the vessel's side, or reach rods or other means to close the discharge openings.

(5) Lifeboats, when stowed on a deck more than 15 feet above the deepest seagoing draft, shall be fitted with skates or other suitable means to facilitate launching against an adverse list of up to 15 degrees. However, skates may be dispensed with if, in the opinion of the Commandant, the arrangements are such as to insure that the lifeboats can be satisfactorily launched without skates. For vessels contracted for prior to November 19, 1952, skates need only be fitted if in the opinion of the Officer in Charge, Marine Inspection, the arrangement or construction of the vessel is such that overhanging decks, openings, or other similar obstructions make their use necessary.

(d) Lifeboats shall not be placed in the bows of tank ships. They shall be stowed in such positions as to insure safe launching.

(e) Suitable access to the lifeboats shall be provided to enable the crew to prepare the lifeboats for launching.

33.20-5 Lifeboat davit falls—T/ALL. All tank ships over 1,000 gross tons shall be provided with covered tubs, boxes, or reels, in which to stow the running part of the lifeboat davit falls. Lifeboat falls shall not be painted.

33.20-10 Lifeboats and life rafts kept clear for launching—TB/ALL. The decks on which lifeboats or life rafts are carried shall be kept clear of freight or any other obstruction that would interfere with the immediate launching of the lifeboats or life rafts.

33.20-15 Stowage of lifeboats and life rafts—TB/ALL. (a) All the lifeboats and life rafts shall be stowed in such a way that they can be launched in the shortest possible time, and that, even under unfavorable conditions of list and trim from the point of view of the handling of the lifeboats and life rafts, it may be possible to embark in them as large a number of persons as possible.

(b) For tank ships, arrangements shall be such that it may be possible to launch on either side of the vessel as large a number of lifeboats and life rafts as possible.

(c) Where practicable, lifeboat chocks shall be so fitted that the lifeboats they serve shall not require lifting before launching.

SUBPART 33.25—MARKINGS, CARE AND INSPECTION

33.25-1 Preparation for voyage—TB/ALL. (a) Lifeboats, life rafts, and buoyant apparatus shall be fully equipped before the vessel leaves port, and the equipment shall remain in the lifeboat, life raft, or buoyant apparatus throughout the voyage. Tank vessels having a sufficient number of lifeboats on each side to accommodate all persons on board may have the lifeboats cared for, as required by § 33.25-15, at sea: *Provided*, That a number of lifeboats sufficient to accommodate all persons on board are fully equipped and ready for use at all times. It shall be unlawful to stow in any lifeboat, life raft, or buoyant apparatus any articles not required by this chapter unless such articles can be properly stowed so as not to reduce the seating capacity or space available to occupants and so as not to adversely affect the seaworthiness of such lifeboat, life raft, or buoyant apparatus.

(b) Loose equipment shall be securely attached to the lifeboat, life raft or buoyant apparatus to which it belongs.

(c) Articles of equipment shall be of good quality, efficient for the purpose they are intended to serve, and shall be kept in good condition.

33.25-5 Numbering and marking of lifeboats—TB/ALL. (a) The number of each lifeboat shall be plainly marked or painted on each side of the bow in figures 3 inches high; and, where lifeboats are carried on both sides of a vessel, the odd-numbered boats shall be stowed on the starboard side, and the even-numbered boats on the port side; i. e., lifeboat No. 1 shall be forward on the starboard side, and lifeboat No. 3 next abaft lifeboat No. 1; lifeboat No. 2 shall be forward on the port side and lifeboat No. 4 next abaft lifeboat No. 2, etc.

(b) The cubical contents and number of persons allowed to be carried on each lifeboat shall be plainly marked or painted on each side of the bow in letters and numbers 1½ inches high. In addition, the number of persons allowed shall be plainly marked or painted on the top of at least two of the thwarts in letters and numbers 3 inches high.

(c) Such letters and numbers shall be dark on a light ground or light on a dark ground.

33.25-10 Marking of life rafts—TB/ALL. There shall be stenciled in a conspicuous place on each life raft the number of persons the life raft can carry.

33.25-15 Overhaul—TB/ALL. (a) Lifeboats and life rafts shall be stripped, cleaned, painted, and thoroughly overhauled at least once in every year. If any deterioration has begun, it shall be corrected even to the extent of renewing that part of the lifeboat or life raft.

(b) The lifeboat davit and falls shall be overhauled at least once in every year.

33.25-20 Maintenance—TB/ALL. (a) Every lifeboat, life raft, or piece of buoyant apparatus together with its equipment shall be kept in every respect in good condition and ready for immediate use.

(b) The material that may support the platform of a life raft or buoyant apparatus shall be examined to determine that its strength is maintained.

(c) Air tanks shall be examined to see that they are in good condition but pressure need not be applied unless the inspector so desires to assure himself as to their condition.

(d) Disengaging apparatus, blocks and falls, if used, shall be determined to be in good condition.

(e) Disengaging apparatus, if used, shall be shown on the annual inspection report, and if the inspector is unable to identify it by name he shall take the matter up with the Coast Guard District Commander in order that such apparatus may be traced for identification and approval record.

SUBPART 33.30—MANNING OF LIFEBOATS

33.30-1 Person in charge of each lifeboat—TB/OCLB. A licensed deck officer, an able seaman, or a certificated lifeboatman shall be placed in charge of each lifeboat or life raft. He shall have a list of its lifeboatmen and other members of its crew which shall be suffcient for her safe management, and shall see that the men placed under his orders are acquainted with their several duties and stations.

33.30-5 Certificated lifeboatmen in each lifeboat—TB/OCLB. (a) There shall be for each lifeboat or life raft a number of lifeboatmen at least equal to that specified as follows: If the lifeboat or life raft carries 25 persons or less, the minimum number of certificated lifeboatmen shall be 1; if the lifeboat or life raft carries 26 persons and less than 41 persons, the minimum number of certificated lifeboatmen shall be 2; if the lifeboat or life raft carries 41 persons and less than 61 persons, the minimum number of certificated lifeboatmen shall be 3.

(b) The allocation of the certificated lifeboatmen to each lifeboat and life raft remains within the discretion of the master, according to the circumstances.

SUBPART 33.35—LIFE PRESERVERS

33.35-1 Number required—TB/ALL. All tank vessels shall be provided with one approved life preserver for each person carried. An additional number of life preservers shall be provided for personnel on watch in the engine room and pilothouse.

33.35-5 Distribution and stowage—TB/ALL. Life preservers shall be distributed throughout the cabins, staterooms, berths, and other places convenient for each person on such tank vessels. The stowage of the additional number of life preservers shall be such that they are readily accessible to personnel on watch in the engine room and pilothouse.

33.35-10 Shipboard inspections — TB/ALL. At each annual inspection of any vessel, or oftener if deemed necessary, the life preservers shall be examined by an inspector to determine serviceability. When life preservers are found to be in accordance with the requirements, the inspector shall stamp them with the word "Passed," his initials, port, and date. Life preservers found not to be in a serviceable condition shall be removed from the vessel's equipment and, if beyond repair, shall be destroyed in the presence of the inspector.

33.35-15 Specifications for manufacturing life preservers—TB/ALL. The specifications regarding life preservers and buoyant materials are in Subparts 160.001, 160.002, 160.003, 160.004, 160.006, 164.001, 164.002, and 164.003 of Subchapter Q (Specifications) of this chapter.

SUBPART 33.40—LIFE BUOYS

33.40-1 Number required on tank ships—T/LBR. The minimum number of approved 30-

inch life buoys and the minimum number to which approved automatic electric water lights shall be attached are fixed by Table 33.40–1.

TABLE 33.40–1 RING LIFE BUOYS REQUIRED

Length of tank ship (feet)	Minimum number of ring life buoys	Minimum number of ring life buoys in column 2 which shall have water lights attached
Column 1	Column 2	Column 3
Under 100	2	1
100 and under 200	4	2
200 and under 300	6	2
300 and under 400	12	4
400 and under 600	16	8
600 and under 800	24	12
800 and over	30	15

33.40–2 Number required on tank ships—T/OC. (a) On all tank ships of less than 500 gross tons, the minimum number of approved 30-inch life buoys and the minimum number to which approved automatic electric water lights shall be attached are fixed by Table 33.40–1.

(b) On all tank ships of 500 gross tons and over, the minimum number of approved 30-inch life buoys and the minimum number to which automatic water lights shall be attached are fixed by Table 33.40–2 (b).

TABLE 33.40–2 (b) RING LIFE BUOYS REQUIRED

Length of tank ship (feet)	Minimum number of ring life buoys	Minimum number of ring life buoys in column 2 which shall have water lights attached
Column 1	Column 2	Column 3
Under 300	8	6
300 and under 400	12	6
400 and under 600	16	8
600 and under 800	24	12
800 and over	30	15

33.40–5 Number required on tank barges—B/ALL. All tank barges regardless of size shall have at least two life buoys on board: *Provided, however*, That unmanned barges are exempt from this section.

33.40–10 Location, distribution, and securing of life buoys—TB/ALL. All life buoys shall be distributed and secured as follows:

(a) All life buoys shall be so placed as to be readily accessible to the persons on board, and their positions plainly indicated so as to be known to the persons concerned. The buoys shall always be capable of being cast loose, and shall not be permanently secured in any way.

(b) One life buoy on each side of a vessel shall have an attached line at least 15 fathoms in length.

SUBPART 33.45—DISTRESS LIGHTS

33.45–1 Distress signals—T/ALL and B/OC. On every tank vessel of 150 gross tons and over there shall be carried within the pilothouse or upon the navigator's bridge twelve approved hand red flare distress signals in a watertight container, or twelve approved hand combination flare and smoke distress signals in a watertight container. Service use shall be limited to a period of three years from date of manufacture. Distress signals not bearing date of manufacture shall not be carried. For specifications for the above signals, see Subparts 160.021 and 160.023 in Subchapter Q (Specifications) of this chapter.

33.45–5 Parachute distress signals—T/OC. In addition to the equipment required by § 33.45–1, all tank ships of 500 gross tons and over shall be provided with 12 approved hand-held rocket-propelled parachute red flare distress signals, contained in a portable watertight container, constructed in accordance with Subpart 160.036 of Subchapter Q (Specifications) of this chapter. Service use of the distress signals shall be limited to a period of 3 years from date of manufacture.

SUBPART 33.50—SIGNALING LAMP

33.50–1 Signaling lamp—T/OC. Ocean and coastwise tank ships over 150 gross tons shall be equipped with an approved daylight signaling lamp.

SUBPART 33.55—LINE-THROWING APPLIANCES

33.55–1 Line-throwing appliances required—T/OC. (a) All ocean and coastwise tank ships of 150 gross tons and over shall be equipped with an approved line-throwing appliance and equipment auxiliary thereto, as specified in this subpart.

(b) Tank ships of 500 gross tons or more shall be equipped with an approved line-throwing ap-

pliance and equipment auxiliary thereto, of the impulse-projected rocket type, the requirements for which are set forth in Subpart 160.040 of Subchapter Q (Specifications) of this chapter. Lyle gun type line-throwing appliances in service on or before July 1, 1951, may be continued in use so long as in good and serviceable condition: *Provided*, That any replacements shall be made with a line-throwing appliance of the impulse-projected rocket type.

(c) Tank ships of 150 gross tons and over and less than 500 gross tons shall be equipped with an approved line-throwing appliance and equipment auxiliary thereto, of the shoulder gun type or the impulse-projected rocket type, the requirements for which are set forth in Subparts 160.031 and 160.040, respectively, of Subchapter Q (Specifications) of this chapter. Lyle gun type line-throwing appliances in service on or before July 1, 1951, may be continued in use so long as in good and serviceable condition: *Provided*, That any replacements shall be made with a line-throwing appliance of the shoulder gun type or the impulse-projected rocket type.

(d) Service use of rockets shall be within four years from date of manufacture.

33.55-5 Accessibility—T/OC. The line-throwing appliance and its equipment shall be kept always easily and immediately accessible and ready for use. No part of this equipment shall be used for any other purpose.

33.55-10 Equipment for line-throwing appliances—T/OC. The equipment enumerated below is required to be carried with the various types of line-throwing appliances:

(a) Impulse-projected rocket type. Four (4) rockets (2 of which shall be of the buoyant type), 4 primer-ejector cartridges, 4 service lines (each of a length not less than that specified in the approval of the appliance carried, of 7/32-inch to 9/32-inch diameter of flax or manila, and having a breaking strength of at least 500 pounds, to be kept in faking boxes or on reels), 1 auxiliary line (1,500 feet of 3-inch circumference manila), 1 can of oil, 1 cleaning brush, 12 wiping patches, and 1 set of instructions furnished by the manufacturer, all in a suitable case or box with the appliance, except that the service lines and the auxiliary line may be stowed in an accessible location nearby.

(b) Shoulder gun type. Ten (10) service projectiles, 4 service lines (each 400 feet of 3/8-inch circumference flax or cotton line, having not less than 250 pounds breaking strength, in faking boxes or reels), 25 cartridges, 1 cleaning rod with brush, 1 can of oil, 12 wiping patches, and 1 set of instructions, all in a suitable case or box with the gun, with an auxiliary line (500 feet of 3-inch circumference manila) accessible for use.

(c) Lyle gun type on existing tank vessels. Six (6) service projectiles, 4 service lines (each 1,700 feet of 7/32-inch to 9/32-inch diameter flax or manila, having not less than 500 pounds breaking strength, in faking boxes or reels), 1 auxiliary line (1,500 feet of 3-inch circumference manila), 1 approved firing attachment (with accessories consisting of lanyard, wrench, washer to fit between barrel and shoulder of firing attachment, blank plug for screwing into gun when firing attachment is not in place, cartridge extractor, and 25 primers in watertight metal box), 18 bags (2½ ounces each) of black powder marked "One-half normal charge for Lyle gun, 2½ ounces black powder" in nonferrous metal screw top container, 25 paper wads, 1 ram rod, 1 wire brush, 1 can light petrolatum, 12 wiping patches, 1 tapered wooden plug for muzzle of gun when not in use, and 1 set of instructions furnished by the manufacturer of the gun, all in a suitable box or chest with the gun.

33.55-15 Service recommendations—T/OC. The following precautions and procedure are recommended for the use of line-throwing appliances and equipment:

(a) Impulse-projected rocket type. Follow the operating instructions and safety precautions furnished by the manufacturer.

(b) Shoulder gun type. Follow the operating instructions and safety precautions furnished by the manufacturer.

(c) Lyle gun type on existing tank vessels. (1) Service powder charge should be about 5 ounces of black powder, and the powder bags should be furnished to the vessel containing 2½ ounces of black powder and marked "one-half normal charge." Under extraordinary circumstances, 7½ ounces (three 2½-ounce bags) of black powder may be used.

(2) In making the line fast to the shank, pass it through the eye and take three or more half-hitches around its own part, leaving a loop of about 10 to 12 inches and taking the hitches about 6 inches apart. This will allow the line to slip slightly through the eye of the shank before the hitches fetch up, thus easing the strain on the line at the loop during the initial acceleration.

(3) A considerable bight led over the side is recommended wherever possible, as it will tend to lessen the jerk on the line at initial acceleration.

(4) At least a fathom of the line from the shank should be thoroughly wet before using to prevent burning.

(5) The faking box or reel should always be faced in the direction of the line of fire and placed abreast of the gun and as close to ship's side as possible. It is not advisable to place the line too close to the muzzle of the gun, as the concussion may lift several layers or coils from the top, causing a snarl which in turn may cause the line to part.

(6) Care should be taken in placing the equipment to prevent fouling of the line in rigging, ridge ropes, etc., which have a tendency to rise or jump up when the gun is fired.

(7) Having made the gun and equipment ready for use, the following procedure in firing is recommended: select a place where the gun may recoil without striking anything, or where it may be securely lashed down. Note the position of the vessel to be relieved, and the direction and approximate force of the wind, and then place the gun in position, making allowance for the drift of the line. Place the line on the windward side of the gun and about 3 feet from it. Make the line fast in the eye of the shank and insert the powder charge, projectile, and primer. In loading, make sure that the projectile is seated against the wad.

(8) After using, the line should be thoroughly dried before rewinding or faking.

PART 34—FIRE-FIGHTING EQUIPMENT

SUBPART 34.01—GENERAL FIRE-FIGHTING REQUIREMENTS

Sec.

34.01–1 Fire equipment for tank vessels—TB/ALL.

34.01–5 Repairs and alterations to fire-fighting equipment—TB/ALL.

34.01–10 Special types of fire apparatus may be used—TB/ALL.

34.01–15 Shutting down of boilers and machinery—T/ALL.

SUBPART 34.05—INSPECTIONS

34.05–1 Inspection of fire-fighting equipment; general—TB/ALL.

34.05–5 All fire-fighting equipment may be tested—TB/ALL.

34.05–10 Testing of fire hose and pumps—TB/ALL.

34.05–15 Inspection of bilges—TB/ALL.

SUBPART 34.10—FIRE PUMPS, MAINS, HYDRANTS, AND FIRE HOSE FOR TANK SHIPS

34.10–1 Fire pumps required—T/ALL.

34.10–5 Capacity of fire pumps; tank ships of 500 gross tons and over—T/ALL.

34.10–10 Type of fire pumps—T/ALL.

34.10–15 Location of fire pumps—T/ALL.

34.10–20 Fire pump relief valves and piping—T/ALL.

34.10–25 Fire hydrants—T/ALL.

34.10–30 Fire hose—T/ALL.

34.10–35 Fire hoze nozzles on tank ships constructed on or after July 1, 1951—T/ALL.

34.10–40 Fire hoze nozzles on tank ships constructed prior to July 1, 1951—T/ALL.

SUBPART 34.15—CARGO SPACES ON TANK SHIPS

34.15–1 General requirements for cargo spaces on tank ships constructed or converted on or after November 19, 1952—T/ALL.

34.15–5 General requirements for cargo spaces on tank ships constructed or converted prior to November 19, 1952—T/ALL.

34.15–10 General requirements for fire extinguishing systems—T/ALL.

34.15–15 Steam systems for cargo spaces—T/ALL.

34.15–20 Carbon dioxide or other inert gas system for cargo spaces—T/ALL.

34.15–25 Foam systems for cargo spaces—T/ALL.

34.15–30 Carbon tetrachloride systems for cargo spaces—T/ALL.

34.15–35 Flue gas fire extinguishing systems for cargo spaces—T/ALL.

SUBPART 34.20—BOILER ROOM AND MACHINERY SPACES ON TANK SHIPS

Sec.

34.20–1 Fixed fire extinguishing systems for boiler rooms and machinery spaces—T/ALL.

34.20–5 General requirements for fixed fire extinguishing systems—T/ALL.

34.20–10 Fixed carbon dioxide fire extinguishing systems installed on tank ships on or after November 19, 1952—T/ALL.

34.20–15 Fixed carbon dioxide fire extinguishing systems installed on tank ships prior to November 19, 1952—T/ALL.

34.20–20 Fixed foam fire extinguishing systems—T/ALL.

34.20–25 Fire extinguishing equipment, other than fixed, for boiler and machinery spaces on tank ships—T/ALL.

SUBPART 34.21—PUMP ROOMS ON TANK SHIPS

34.21–1 Fixed fire extinguishing systems for tank ships constructed or converted on or after November 19, 1952—T/ALL.

34.21–5 Fire extinguishing systems for tank ships constructed or converted prior to November 19, 1952—T/ALL.

SUBPART 34.22—LAMP AND PAINT ROOMS AND SIMILAR COMPARTMENTS ON TANK SHIPS

34.22–1 Fireproofing of lamp, oil, and paint rooms—T/ALL.

34.22–5 Fixed fire extinguishing systems for lamp and paint rooms and similar spaces on tank ships constructed or converted on or after November 19, 1952—T/ALL.

34.22–10 Fire extinguishing systems for lamp and paint rooms and similar spaces on tank ships constructed or converted prior to November 19, 1952—T/ALL.

SUBPART 34.25—HAND FIRE EXTINGUISHERS

34.25–1 Hand fire extinguishers; test and approval—TB/ALL.

34.25–5 Hand fire extinguishers; marking—TB/ALL.

34.25–10 Hand fire extinguishers; location—TB/ALL.

34.25–15 Hand fire extinguishers; inspection—TB/ALL.

34.25–20 Hand fire extinguishers; spare charges and parts—TB/ALL.

34.25–25 Hand fire extinguishers; number required on tank ships—T/ALL.

34.25–30 Hand fire extinguishers required on tank vessels of over 15 gross tons using oil as fuel—TB/ALL.

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SUBPART 34.30—FIRE AXES

Sec.

34.30–1 Fire axes required—T/ALL.

34.30–5 Location and use of fire axes—T/ALL.

SUBPART 34.35—SAND BOXES

34.35–1 Sand boxes required on tank vessels using oil as fuel under boilers—TB/ALL.

SUBPART 34.40—FIRE-FIGHTING EQUIPMENT FOR TANK BARGES

34.40–1 Portable extinguishing equipment for cargo spaces—B/ALL.

34.40–5 Hand fire extinguishers for quarters, pump room, and machinery spaces—B/ALL.

AUTHORITY: Sections 34.01–1 to 34.40–5 issued under R. S. 4405, as amended, 4417a, as amended, 4462, as amended; 46 U. S. C. 375, 391a, 416. Interpret or apply sec. 5, 55 Stat. 244, 245, as amended; 50 U. S. C. App. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 34.01—GENERAL FIRE-FIGHTING REQUIREMENTS

Section 34.01–1 Fire equipment for tank vessels—TB/ALL. All tank vessels subject to the regulations in this subchapter shall have fire extinguishers and fire-fighting apparatus in accordance with the regulations in this subchapter, and where required, the equipment shall be constructed in accordance with the regulations contained in the applicable subparts of Subchapter Q (Specifications) of this chapter: *Provided, however*, That all fire extinguishers and fire-fighting apparatus which is of the character that complied with the rules and regulations of the Commandant on vessels in existence at the time the regulations in this subchapter are promulgated, and have been in use on such vessels, may be continued in use so long as such fire extinguishers and such fire-fighting apparatus are found to be in good and workable condition. Where fire extinguishers and fire-fighting apparatus are not found to be in good and workable condition, they shall be repaired or else replaced by fire extinguishers or fire-fighting apparatus of the latest approved type, as required by the regulations in this subchapter and Subchapter Q (Specifications) of this chapter. Where fire extinguishers or fire-fighting apparatus are found to be in good and workable condition, but deficient as to quantity or numbers, the additional quantity or numbers required by the regulations in this subchapter shall be of the latest approved type. Fixed systems which are included in the fire-fighting equipment for tank vessels and which have been in the past approved by the Commandant shall be deemed to comply with the regulations in this subchapter both as to character and quantity, provided such systems are in good and workable condition.

34.01–5 Repairs and alterations to fire-fighting equipment—TB/ALL. (a) No extensive repairs or alterations, except in emergency, shall be made to any fire-extinguishing apparatus, or other appliance subject to inspection, without advance notice to the Officer in Charge, Marine Inspection. Such repairs or alterations shall so far as is practicable be made with materials and tested in the manner specified within the regulations in this subchapter and Subchapter Q (Specifications) of this chapter for new construction.

(b) Emergency repairs or alterations shall be reported as soon as practicable to the Officer in Charge, Marine Inspection, where the vessel may call after such repairs are made.

34.01–10 Special types of fire apparatus may be used—TB/ALL. Where in this part any special type of appliance, fire extinguishing medium, or arrangement is specified, the Commandant may approve the substitution of any other appliance, fire extinguishing medium, or arrangement, such as, for example, a fixed dry chemical system for a fixed fog system, provided it is first demonstrated to his satisfaction that the substitution is at least as effective as that specified in this part.

34.01–15 Shutting down of boilers and machinery—T/ALL. The fire-extinguishing systems provided for in this part which depend for their operation on the ship's boilers or machinery, shall not be required to be immediately available at docks or at anchorages.

SUBPART 34.05—INSPECTIONS

34.05–1 Inspection of fire-fighting equipment; general—TB/ALL. (a) At each annual inspection, and at any other time as required in the judgment of the Officer in Charge, Marine Inspection, all fire-fighting equipment on tank vessels shall be inspected.

(b) The examination of the fire-fighting equipment shall be made by inspectors. This applies to fire pumps, hose, chemical fire extinguishers,

axes, and steam or gas smothering lines to cargo holds and compartments.

(c) The inspectors shall examine the fire-fighting equipment provided for the fireroom and engine room to ascertain if it conforms to the regulations in this subchapter and that it is in good condition for immediate use.

(d) At the annual inspection or at any other time as required, the inspectors shall examine the water-sprinkling system, when fitted, to ascertain if it is in good condition and ready for immediate use.

34.05–5 All fire-fighting equipment may be tested—TB/ALL. During the inspection of fire-fighting equipment, the Officer in Charge, Marine Inspection, may require fire apparatus to be tested; and used, except as provided under Sections 34.15–20 (e), 34.20–10 (h), 34.20–15 (d), and 34.25–15.

34.05–10 Testing of fire hose and pumps—TB/ALL. The inspectors shall examine all pumps, hose, and other fire apparatus and shall see that the hose is subjected to a pressure of 100 pounds to the square inch, and that the hose couplings are securely fastened in accordance with the regulations in this subchapter.

34.05–15 Inspection of bilges — TB/ALL. When inspecting oil-burning vessels, either internal-combustion type or steam-driven type, the inspector shall examine the tank tops and bilges in the fireroom and engine room to see that there is no accumulation of oil which might create a fire hazard.

SUBPART 34.10—FIRE PUMPS, MAINS, HYDRANTS, AND FIRE HOSE FOR TANK SHIPS

34.10–1 Fire pumps required—T/ALL. All tank ships shall be provided with pumps available for use as fire pumps, as follows:

(a) Tank ships of less than 500 gross tons shall be equipped with an efficient hand pump capable of delivering 50 gallons per minute or a power driven pump of equivalent capacity: *Provided*, That on tank ships of 20 gross tons or under where it is impracticable to install a hand or power operated fire pump, or on tank ships with only one man in the crew, at least one additional 15-pound carbon dioxide or the equivalent fire extinguisher may be accepted in lieu of a fire pump.

(b) Tank ships of 500 gross tons and over, but not over 1,000 gross tons shall be provided with one independently driven power pump.

(c) Tank ships of over 1,000 gross tons shall be provided with two independently driven power pumps.

34.10–5 Capacity of fire pumps; tank ships of 500 gross tons and over—T/ALL. (a) The capacity of the combined fire pump installation shall be one-fifth gallon per minute per gross ton of the ship. The maximum total fire pump capacity required for any tank ship shall be 800 gallons per minute.

(b) Fire pumps on tank ships of 500 gross tons and over shall be capable of delivering two powerful jets of water simultaneously from the highest outlets on the fire main at a Pitot tube pressure of approximately 50 pounds per square inch through nozzles, each having an orifice of not less than $\frac{7}{8}$ inch diameter, where the internal diameter of the hose exceeds $1\frac{1}{2}$ inches, and not less than $\frac{5}{8}$ inch diameter, where the internal diameter of the hose does not exceed $1\frac{1}{2}$ inches.

(c) While arranged with permanent connections to the fire main the pumps may be utilized also for other purposes, provided that one of the required pumps is kept available for immediate use on the fire system. In no case, however, shall a pump having connection to oil lines be used as a fire pump.

34.10–10 Type of fire pumps—T/ALL. Tank ships are not restricted to any particular type or proportions for fire pumps.

34.10–15 Location of fire pumps—T/ALL. (a) On oil-burning tank ships, provided with two fire pumps, where the engine and firerooms are not entirely separated by iron or steel bulkheads, or if fuel can drain from fireroom bilges into the engine room, one of the fire pumps shall be located in an accessible space separate from the machinery compartment.

(b) On all tank ships the construction or conversion of which is started on or after November 19, 1952, where 2 fire pumps are required, they shall be located in separate spaces, and the arrangements of pumps, sea connections, and sources of power shall be such as to insure that a fire in any one space will not put all of the fire pumps

out of operation. However, where it is shown to the satisfaction of the Commandant that it is unreasonable or impracticable to provide two sources of power due to the size or arrangement of the vessel, or for other reasons, the installation of a total flooding carbon dioxide system may be accepted as an alternate method of extinguishing the fire affecting the powering and operation of at least one of the required fire pumps in lieu of having separate sources of power.

34.10–20 Fire pump relief valves and piping—T/ALL. (a) Fire pumps shall be fitted on the discharge side with a relief valve and a pressure gage to indicate the pressure on the fire main. Except when the fire pumps are being used in tank cleaning operations, the relief valves shall be set to relieve at 25 pounds higher than the pressure necessary to maintain the requirements of Section 34.10–5 (b) of this part. If the fire pumps operating under shutoff conditions are not capable of producing a pressure exceeding 125 pounds per square inch, the relief valves may be omitted.

(b) Suction pipes for all fire pumps shall be so arranged as to have an area of opening sufficiently large to supply water when the pumps are working at full capacity.

(c) The size of the discharge pipe leading from fire pumps shall in no case be less than that of the discharge opening of the pump, and in no case shall it be less than 1½ inches in internal diameter.

(d) The pipe, valves, fittings, and construction of fire lines shall conform to the requirements contained in Part 55 of Subchapter F (Marine Engineering) of this chapter.

34.10–25 Fire hydrants—T/ALL. (a) Fire hydrants shall be of sufficient number and so arranged that any part of the living quarters, weather decks, machinery spaces, stores and working spaces, and any part of cargo decks accessible to the crew while at sea may be reached with 2 streams of water, one of which shall be from a single 50 foot length of hose.

(b) Hose connections shall be brass, bronze, or other equivalent metal. For installations on tank ships, the construction or conversion of which is started on or after July 1, 1954, National Standard fire hose coupling threads shall be used for the 1½-inch and 2½-inch sizes, i. e., 9 threads per inch for 1½-inch hose and 7½ threads per inch for 2½-inch hose.

(c) Outlet openings shall have a diameter of not less than 1½ inches.

(d) All fire hydrants shall be equipped with hose spanners.

(e) The arrangement of the fire hydrant shall be limited to any position from the horizontal to the vertical pointing downward, so that the hose will lead downward or horizontally, in order to minimize the possibility of kinking. In no case will a hydrant arranged in a vertical position with the outlet pointing upward be accepted.

(f) The pipes and hydrants shall be so placed that the fire hose may be easily coupled to them. In ships where deck cargo may be carried, the position of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo.

(g) Each fire hydrant shall be equipped with a valve so that the hose may be removed while there is pressure on the fire main.

34.10–30 Fire hose—T/ALL. (a) Fire hose shall be connected to the outlet at all times except on open decks, where the location of the fire hydrants is such that no protection is offered for the hose in heavy weather.

(b) The fire hose may be temporarily removed when it will interfere with the landing of cargo.

(c) Each fire hose shall be provided with a suitable nozzle.

(d) Fire hose, when part of the fire equipment, shall not be used for any other purpose than fire extinguishing, fire drills, and testing.

(e) Fire hose shall be drained and stowed in its proper place immediately after being used.

(f) Couplings shall conform to the requirements of Paragraph 34.10 (b).

34.10–35 Fire hose nozzles on tank ships constructed on or after July 1, 1951—T/ALL. (a) Where smooth bore type hose nozzles are used, the nozzle orifice size shall be as indicated in Section 34.10–5 (b).

(b) On all tank ships of 1,000 gross tons and over, the nozzles used on at least 2 hose lines in the boiler and machinery spaces shall be of approved combination solid stream and water fog nozzles which are capable of producing a solid stream or a high velocity fog, and being shut off. In addition, an approved applicator equipped with

a low velocity water fog tip, which is capable of being attached directly to the nozzle or the hose, shall be provided for each nozzle. Unless a self-cleaning strainer is contained within the nozzle itself and within the applicator where the applicator is attached directly to the hose, there shall be a self-cleaning strainer attached to the fire hydrant either directly or by means of a short length of hose.

(c) At least 25 percent of the hydrants, exclusive of those in the boiler and machinery spaces, shall be fitted with approved combination nozzles, applicators with low velocity fog spray heads, and self-cleaning strainers as described in Section 34.10-35 (b). Such nozzles shall be strategically located throughout the tank ship.

(d) Where approved combination nozzles are used with fire lines other than required in Section 34.10-35 (b) and (c), the applicators, low velocity fog spray heads, and self-cleaning strainers may be fitted with but will not be required.

34.10-40 Fire hose nozzles on tank ships constructed prior to July 1, 1951—T/ALL. (a) Where smooth bore type hose nozzles are used, the nozzle orifice size shall be as indicated in Section 34.10-5 (b).

(b) Fire hose lines in boiler and machinery spaces of vessels of 1,000 gross tons or over shall be provided with at least 2 suitable nozzles of an approved type which are capable of effectively extinguishing oil fires. Approved combination nozzles as described in Section 34.10-35 (b), together with the applicator and low velocity fog spray head, will be acceptable for this purpose. The self-cleaning strainer may be fitted, but will not be required.

SUBPART 34.15—CARGO SPACES ON TANK SHIPS

34.15-1 General requirements for cargo spaces on tank ships constructed or converted on or after November 19, 1952—T/ALL. (a) Every tank ship shall be provided with an approved fixed fire extinguishing system for all cargo spaces.

(b) The types of fire extinguishing systems which may be used are as follows:

(1) Steam.

(2) Carbon dioxide or other inert gas.

(3) Foam. (May not be used for dry cargo spaces.)

(4) Carbon tetrachloride. (May be used on the approval of the Commandant only. May not be used for tanks in excess of 6,300 cubic feet, not for any dry cargo spaces.)

34.15-5 General requirements for cargo spaces on tank ships constructed or converted prior to November 19, 1952—T/ALL. (a) Every tank ship shall be provided with an approved fire extinguishing system for all cargo spaces. Such system may be portable, semi-portable or fixed.

(b) The types of fire extinguishing systems which may be used are as follows:

(1) Steam.

(2) Carbon dioxide or other inert gas.

(3) Foam.

(4) Carbon tetrachloride. (May be used on the approval of the Commandant only. May not be used for tanks in excess of 6,300 cubic feet.)

34.15-10 General requirements for fire extinguishing systems—T/ALL. (a) For the purpose of this subpart, the term "largest cargo compartment" shall be considered as the cargo space, either liquid or dry, having the greatest volumetric measurement. In the case of liquid cargo tanks, the gross volume of the individual tanks shall be used. In the case of dry cargo compartments, the gross volume shall be taken between adjacent watertight or firescreen bulkheads, and from tank top or lowest deck to the deckhead of the uppermost deck on which cargo may be carried, and if a trunk extends beyond such deckhead, the volume of the trunk shall be included.

(b) The valves of all fixed fire extinguishing systems shall be so located as to be easily accessible and not readily cut off from use by an outbreak of fire, and shall be marked as required by Section 35.40-10.

(c) Provisions shall be made for draining the manifolds and individual lines of fire extinguishing systems to protect them against freezing.

(d) In general, all piping shall comply with the requirements of Part 55 of Subchapter F (Marine Engineering) of this chapter. The piping systems for carbon dioxide shall have a minimum bursting pressure of 6,000 per square inch.

(e) Piping for dry cargo spaces shall be run independent of the extinguishing system for the bulk cargo tanks. If this should be impracticable, valves shall be installed between the main bulk tank extinguishing system and other compartments served, such valves to be marked: "This valve to be kept closed except in case of fire."

(f) For dry cargo spaces, means shall be provided for stopping any ventilator fans and closing all openings from outside the spaces protected.

34.15-15 Steam systems for cargo spaces—T/ALL. (a) When a steam fire extinguishing system is installed, the requirements of this section shall be met.

(b) Steam for fire extinguishing systems shall be available from the main boilers, donkey or auxiliary boilers, or from a shore source. The capacity of the steam supply shall be at least equal to one pound of steam per hour for each 12 cubic feet of the largest cargo compartment in the case of tank ships constructed or converted on or after November 19, 1952, and one pound of steam per hour for each 50 cubic feet of the largest cargo compartment in the case of tank ships constructed or converted prior to November 19, 1952.

(c) A steam pressure of at least 100 pounds per square inch shall be maintained for fire extinguishing purposes. Where the maximum allowable boiler working pressure will not permit of this, or where steam from a shore plant is being used, the maximum steam pressure available from either source shall be used, but not to exceed the normal operating pressure of the ship's steam system.

(d) The master valve control shall be located above the uppermost complete deck having permanent means of closing all openings in the weather portions of the deck. The main lines shall have sufficient area to supply all individual lines to the largest tank and the tanks adjacent thereto, and in the case of dry cargo compartments, the entire compartment. The valves to the tanks shall be left open at all times so that, in case of fire, it will be necessary only to open the master valve to insure a flow of steam into each tank, after which, the valves to the tanks which are not on fire may be closed: *Provided*, That where the opening of such branch lines may cause contamination of cargo or cause the passage of gases or vapors between tanks or compartments, they may be kept closed.

(e) Steam smothering lines shall be tested with at least 50 pounds per square inch of air pressure or by blowing steam through the lines at the working pressure and a survey made for detecting corrosion and defects using hammer test or such other means as may be necessary.

(f) The minimum nominal diameter of any steam fire extinguishing pipe shall be 1½ inches.

34.15-20 Carbon dioxide or other inert gas system for cargo spaces—T/ALL. (a) When a carbon dioxide system is installed it shall be of an approved type and shall meet the requirements of this section. Specific approval by the Commandant is required for the installation of other inert gas system, and it shall be demonstrated that such system offers protection at least equivalent to the required carbon dioxide system.

(b) At least one pound of carbon dioxide shall be available for each 30 cubic feet of the largest cargo compartment.

(c) For liquid cargo spaces, the rate of discharge shall be such as to supply the required amount within 5 minutes.

(d) For dry cargo spaces, no specific rate of discharge need be provided. However, the pipes to the individual spaces shall be at least ¾ inch.

(e) At annual inspections, all carbon dioxide cylinders for fixed, semiportable, and portable systems shall be examined externally and replaced if any corrosion is found. They shall also be checked by weighing to determine their contents, and if found to be more than 10 percent under the required contents of carbon dioxide, they shall be recharged.

34.15-25 Foam systems for cargo spaces—T/ALL—(a) Approved type. When a foam system is installed, it shall be of an approved type and shall meet the requirements of this section.

(b) Area protected. The system shall be so designed and arranged as to spread a blanket of foam over the entire liquid surface of any tank within the range of usual trim. The arrangement of piping shall be such as to give a uniform distribution over the entire area protected.

(c) Rate of application. (1) The rate of discharge to foam outlets to the various tanks shall be at least as set forth in this paragraph.

(2) For chemical foam systems with stored "A" and "B" solutions, a total of at least one gallon per minute of the 2 solutions shall be discharged for each 10 square feet of the area protected.

(3) For other types of foam systems, the water rate to the dry powder generators or air foam production equipment shall be at least one gallon per minute for each 10 square feet of the area protected.

(d) Supply of foam producing material. There shall be provided a quantity of foam producing materials sufficient to operate the equipment at the discharge rate specified in Section 34.15–25 (c) in the tank having the largest superficial liquid area for a period of at least 5 minutes.

(e) Fixed type. If the foam system is of the fixed type, the apparatus and chemicals shall be contained in a fire-resistant compartment protected from the weather and where the operator will be shielded from fire and smoke.

(f) Portable or semiportable type. If the foam system is of the portable or semiportable type, the apparatus and chemicals shall be stowed in a readily accessible place protected from the weather.

34.15–30 Carbon tetrachloride systems for cargo spaces—T/ALL. (a) When a carbon tetrachloride system is installed, at least one quart shall be available for each 225 cubic feet of the largest cargo compartment.

34.15–35 Flue gas fire extinguishing systems for cargo spaces—T/ALL. Inert-gas system for extinguishing fires in cargo spaces, where the source of the inert gas is the stack or a furnace for producing such inert gas shall be considered as complying with the regulations in this subchapter, provided such system shall have the approval of the Commandant as required in § 34.15–20(a).

SUBPART 34.20—BOILER ROOM AND MACHINERY SPACES ON TANK SHIPS

34.20–1 Fixed fire extinguishing systems for boiler rooms and machinery spaces—T/ALL. (a) Any fixed fire extinguishing system installed in boiler rooms or machinery spaces, whether required or not, shall be of an approved type.

(b) All tank ships propelled by internal combustion engines using a fuel having a flash point of less than 110 degrees F. shall be fitted with a fixed carbon dioxide fire extinguishing system in the engine room space.

(c) All steam propelled tank ships using oil for fuel, construction or conversion of which is started on or after November 19, 1952, shall be fitted with a fixed carbon dioxide or foam fire extinguishing system in all spaces containing oil fired boilers, whether main or auxiliary, their fuel oil service pumps and/or such fuel oil units as the heaters, strainers, valves, manifolds, etc., that are subject to the discharge pressure of the fuel oil service pumps.

(d) All tank ships propelled by internal combustion machinery and having auxiliary boilers using oil for fuel, construction or conversion of which is started on or after November 19, 1952, shall be fitted with a fixed carbon dioxide or foam fire extinguishing system in all spaces containing such boilers, their fuel oil service pumps and/or such fuel oil units as heaters, strainers, valves, manifolds, etc., that are subject to the discharge pressure of the fuel oil service pumps.

(e) If a fixed fire extinguishing system is installed to protect an internal combustion propelling machinery installation, the system shall be of the carbon dioxide type.

34.20–5 General requirements for fixed fire extinguishing systems—T/ALL. (a) The valves of all fire extinguishing systems shall be plainly marked to indicate the compartments into which they discharge, and they shall be so located as to be easily accessible and not readily cut off from use by an outbreak of fire.

(b) Provisions shall be made for draining the manifolds and individual lines.

(c) Where the same type medium is used for both the machinery space and cargo extinguishing systems, the same supply may be used.

(d) If fuel can drain from the compartment being protected to an adjacent compartment, or if the compartments are not entirely separate, the requirements for both compartments shall be used to determine the amount of extinguishing agent to be provided. The extinguishing agent shall be arranged to discharge into both such compartments simultaneously.

34.20–10 Fixed carbon dioxide fire extinguishing systems installed on tank ships on or after November 19, 1952—T/ALL. (a) The

quantity of carbon dioxide in pounds to be supplied shall be at least equal to the gross volume of the space in cubic feet, taken between watertight or oiltight bulkheads and from tank top or flat forming the lower boundry of the space to the deck head of the space, divided by a factor as set forth in Table 34.20–10(a) depending upon the volume of the space. For machinery spaces, the upper boundry of the space shall be taken as the underside of the deck forming the hatch opening unless the machinery or boilers extend into such hatch, in which case, the volume shall be taken to the top of the hatch trunk or the next material reduction in area of the trunk, whichever is lower.

TABLE 34.20–10 (a)

Gross volume of space, cubic feet		Factor
Over	Not over	
------	500	15
500	1, 600	16
1, 600	4, 500	18
4, 500	50, 000	20
50, 000	------	22

(b) The whole charge of carbon dioxide shall be capable of being released simultaneously by operating one valve and one control; such valve and control shall be adequately protected to avoid the accidental discharge of the system. The valves shall be marked as required by Section 35.40–10.

(c) The system shall be so designed that the cylinders are completely discharged in not more than 2 minutes.

(d) The arrangement of piping shall be such as to give a general and fairly uniform distribution over the entire space protected. All pipes, valves, and fittings shall have a minimum bursting pressure of 6,000 p. s. i.

(e) A suitable alarm shall be provided to operate automatically when the control valve is operated. The alarm shall be conspicuously and centrally located in the space protected and shall be marked as required by Section 35.40–7.

(f) Means shall be provided for stopping all mechanical ventilation to the space protected from outside such space.

(g) Means shall be provided for closing all openings to the space protected from outside such space. In this respect, dampers or other means shall be available for blanking-off natural ventilators, and relatively tight doors and shutters shall be provided for openings in the lower portion of the space. The construction shall be such that openings in the upper portion of the space can be closed-off either by permanently installed means or by the use of canvas or other materials which is normally carried by the tank ship.

(h) At annual inspections, all carbon dioxide cylinders shall be examined externally and replaced if any corrosion is found. They shall also be checked by weighing to determine their contents, and if found to be more than 10 percent under the required content of carbon dioxide, they shall be recharged.

34.20–15 Fixed carbon dioxide fire extinguishing systems installed on tank ships prior to November 19, 1952—T/ALL. (a) (1) A total flooding system is one in which the entire space is protected. The quantity of carbon dioxide in pounds to be supplied shall be at least equal to the gross volume of the space in cubic feet, taken between oiltight or watertight bulkheads and from tank top or flat forming the lower boundary of the space to the deck head of the space, divided by 22. For machinery spaces, the upper boundary of the space shall be taken as the underside of the deck forming the hatch opening unless the machinery or boilers extend into such hatch, in which case, the volume shall be taken to the top of the machinery or boilers.

(2) A bilge system is one in which the bilge or space below the floor plates is protected. The quantity of carbon dioxide in pounds to be supplied shall be at least equal to the gross volume of the space in cubic feet, taken between watertight or oiltight bulkheads and from the tank top or flat forming the lower boundary of the space to the top of the shell of a fire tube boiler or top of the casing or drums of a water tube boiler, divided by 36.

(b) When a fixed carbon dioxide extinguishing system is installed to protect a space containing oil fired boilers, either a bilge system or a total flooding system may be used.

(c) When a fixed carbon dioxide fire extinguishing system is installed to protect a space containing internal combustion propelling machinery, a total flooding system shall be used.

(d) The provisions of Section 34.20–10 (b) through (e) shall be complied with, and Section 34.20–10 (f) through (h) shall be complied with insofar as is reasonable and practicable.

34.20–20 Fixed foam fire extinguishing systems—T/ALL. (a) (1) The system shall be so designed and arranged as to spread a blanket of foam over the entire tank top or bilge of the space protected. The arrangement of piping shall be such as to give a uniform distribution over the entire area protected.

(2) Where such installations are made on or after November 19, 1952, to protect an oil fired boiler installation on a flat which is open to or can drain to the lower engine room or other space, both the flat and the lower space shall be protected simultaneously. The flat shall be fitted with suitable coamings on all openings other than the deck drains to properly restrain the foam at that level. Other installations of a similar nature shall be considered in a like manner.

(b) (1) The rate of discharge to foam outlets protecting the hazard or area shall be at least as set forth in this paragraph.

(2) For chemical foam systems with stored "A" and "B" solutions, a total of at least 1.6 gallons per minute of the two solutions shall be discharged for each 10 square feet of area protected.

(3) For other types of foam systems, the water rate to the dry powder generators or air foam production equipment shall be at least 1.6 gallons per minute for each 10 square feet of surface to be protected.

(c) There shall be provided a quantity of foam producing materials sufficient to operate the equipment at the discharge rate specified in § 34.20–20 (b) for a period of at least 3 minutes.

(d) All containers and valves by which the foam system is operated shall be easily accessible and so placed that they will not readily be cut off from use by an outbreak of fire. The valves shall be marked as required by Section 35.40–10.

(e) Where installations are made on or after November 19, 1952, in order that any residual fires above the floor plates may be extinguished when a foam system is used, at least 2 fire hydrants, in addition to those required for the machinery space by Section 34.10–35 (b), shall be installed outside of the machinery space entrances. Such hydrants shall be fitted with sufficient hose so that any part of the machinery space may be reached with at least two streams of water, and each hose shall be equipped with an approved combination nozzle, applicator, and self-cleaning strainer as described in Section 34.10–35 (b).

(f) On installations installed prior to November 19, 1952, a semiportable foam generator using a dry chemical mixture or mechanical foam in conjunction with the fire lines may be substituted for the fixed system subject to the following conditions:

(1) There shall be at least one fire pump of suitable capacity available which can be operated and controlled from outside the space protected.

(2) Stop valves shall be installed in the line so that if any portion of the fire main is ruptured, the foam generator may still be operated. Connections for at least two fire hoses shall be provided between the pump and the stop valve.

(g) All piping shall comply with the requirements of Subchapter F (Marine Engineering) of this chapter.

34.20–25 Fire extinguishing equipment, other than fixed, for boiler and machinery spaces on tank ships—T/ALL. (a) The minimum requirements for fire-fighting equipment on all tank ships which are not fitted with fixed fire extinguishing systems in boiler room and machinery spaces shall be of the type and character specified as follows:

(1) Steam tank ships of more than 750 gross tons: One semiportable fire extinguisher of either the 40-gallon capacity foam type, 100-pound capacity carbon dioxide type, or dry chemical type having approved equivalent capacity, for each boiler room.

(2) Steam tank ships of 750 gross tons and under: One semiportable fire extinguisher of either the 20-gallon capacity foam type, 50-pound capacity carbon dioxide type, or dry chemical type having approved equivalent capacity, for each boiler room.

(3) Internal combustion engine driven tank ships of 50 gross tons and upward: One semiportable fire extinguisher of either the 12-gallon capacity foam type, 35-pound capacity carbon dioxide type, or dry chemical type having an ap-

proved equivalent capacity, for each 1,000 B. H. P. or fraction thereof. Alternately, approved units having a larger capacity may be used, provided the total capacity is not less than that required for the individual units.

(4) When donkey boilers using oil as fuel are located in the machinery spaces on tank ships propelled by internal combustion engines, a 40-gallon capacity semiportable fire extinguisher of the foam type, or its equivalent as set forth in Subparagraph (1) of this paragraph, shall be substituted for one of the 12-gallon capacity semiportable fire extinguishers, or equivalent, required by Subparagraph (3) of this paragraph.

(5) All of the foregoing semiportable fire extinguishers shall be fitted with suitable hose attachments or other approved methods of distributing the foam, carbon dioxide, or dry chemical in any part of the space to be protected.

(b) On tank ships of 1,000 gross tons and over in ocean or coastwise service, the construction or conversion of which was started on or after November 19, 1952, there shall be installed in any space containing an oil fired boiler, either main or auxiliary, one 2½-gallon foam type fire extinguisher, or the equivalent as described in Section 34.25–25, for each burner. However, the total number need not exceed 5 in any one space. These fire extinguishers are in addition to those required by Sections 34.25–25 and 34.25–30.

(c) On tank ships of 1,000 gross tons and over in ocean or coastwise service, propelled by internal combustion engines, the construction or conversion of which was started on or after November 19, 1952, there shall be installed one 2½-gallon foam type fire extinguisher, or the equivalent as described in Section 34.25–25, for each 1,000 B. H. P. of the main engines or fraction thereof; provided there shall be at least 2 such fire extinguishers, but need not be more than 6. These fire extinguishers are in addition to those required by Section 34.25–25.

(d) On tank ships of 1,000 gross tons and over in ocean or coastwise service, propelled by internal combustion engines, the construction or conversion of which was started on or after November 19, 1952, if a fixed fire extinguishing system is fitted in the machinery space, there shall be in addition in each space containing such engines a 12-gallon capacity semiportable fire extinguisher of the foam type, or its equivalent as set forth in Subparagraph (a) (3) of this section, fitted in accordance with the provisions of Subparagraph (a) (5) of this section.

SUBPART 34.21—PUMP ROOMS ON TANK SHIPS

34.21–1 Fixed fire extinguishing systems for tank ships constructed or converted on or after November 19, 1952—T/ALL. (a) On tank ships the construction or conversion of which was started on or after November 19, 1952, a fixed steam, foam, or carbon dioxide fire extinguishing system shall be provided for the pump rooms.

(b) Piping for the pump room system shall be run independent of the fire extinguishing system for the bulk cargo tanks. If this should be impracticable, valves shall be installed between the main bulk tank extinguishing systems and the pump room, such valves to be marked: "This valve to be kept closed except in case of fire."

(c) Control valves for pump room extinguishing systems shall be located adjacent to the pump room exit. The valves shall be marked as required by Section 35.40–10.

(d) Means shall be provided for stopping ventilation fans from outside the space, and for closing all doorways, hatches, and other openings, when steam or inert gas is used.

(e) When a steam smothering system is installed, the outlets shall terminate in the lower pump room, just above the floor plates. The steam smothering system shall meet the general requirements of Section 34.15–15.

(f) When a carbon dioxide system is installed, it shall meet the general requirements contained in Section 34.20–10.

(g) When a foam system is installed, it shall meet the general requirements of Section 24.20–20.

34.21–5 Fire extinguishing systems for tank ships constructed or converted prior to November 19, 1952—T/ALL. (a) On tank ships the construction or conversion of which was started prior to November 19, 1952, but on or after July 1, 1951, a steam, inert gas, or foam system shall be provided for extinguishing fires in pump rooms. For vessels the construction or conversion of which was started prior to July 1, 1951, such sys-

tems are not required, but if installed, should meet the general requirements of this section.

(b) Piping for fixed pump room systems, shall be run independent of the fire extinguishing system for the bulk cargo tanks. If this should be impracticable, valves shall be installed between the main bulk tank extinguishing system and the pump room, such valves to be marked: "This valve to be kept closed except in case of fire."

(c) Control valves for fixed pump room extinguishing systems shall be located adjacent to the pump room exit. The valves shall be marked as required by Section 35.40–10.

(d) Means shall be provided for stopping ventilation fans from outside the space, and for closing all doorways, hatches, and other openings, when steam or inert gas is used.

(e) When a steam smothering system is installed, the outlets shall terminate in the lower pump room, just above the floor plates.

SUBPART 34.22—LAMP AND PAINT ROOMS AND SIMILAR COMPARTMENTS ON TANK SHIPS

34.22–1 Fireproofing of lamp, oil, and paint rooms—T/ALL. Lamp, oil and paint rooms shall be wholly and tightly lined with metal.

34.22–5 Fixed fire extinguishing systems for lamp and paint rooms and similar spaces on tank ships constructed or converted on or after November 19, 1952—T/ALL. (a) On tank ships the construction or conversion of which was started on or after November 19, 1952, a fixed carbon dioxide or steam fire extinguishing system shall be installed in all paint rooms and similar compartments.

(b) Piping for the lamp and paint lockers and similar compartments shall be run independent of the extinguishing system for the bulk cargo tanks. If this should be impracticable, valves shall be installed between the main bulk tank extinguishing system and other compartments, such valves to be marked: "This valve to be kept closed except in case of fire."

(c) Control valves shall be marked as required by Section 35.40–10.

(d) When a steam system is installed it shall meet the general requirements of Section 34.15–15, except that the minimum nominal diameter of any steam fire extinguishing pipe shall be ¾ of an inch.

(e) When a carbon dioxide system is installed, it shall meet the general requirements for a total flooding system as contained in Section 34.20–10.

(f) Means shall be provided for stopping ventilation fans from outside the space, and for closing all doors and other openings.

34.22–10 Fire extinguishing systems for lamp and paint rooms and similar spaces on tank ships constructed or converted prior to November 19, 1952—T/ALL. (a) On tank ships the construction or conversion of which was started prior to November 19, 1952, a steam, inert gas, or foam system shall be provided for extinguishing fires in all lamp and paint rooms and similar compartments.

(b) Piping for the lamp and paint lockers and similar compartments shall be run independent of the extinguishing system for the bulk cargo tanks. If this should be impracticable, valves shall be installed between the main bulk tank extinguishing system and other compartments, such valves to be marked: "This valve to be kept closed except in case of fire."

(c) Control valves for fixed systems shall be marked as required by Section 35.40–10.

(d) Means shall be provided for stopping ventilation fans from outside the space, and for closing all doors and other openings when steam or inert gas is used.

SUBPART 34.25—HAND FIRE EXTINGUISHERS

34.25–1 Hand fire extinguishers; test and approval—TB/ALL. Every type of fire extinguisher provided for and required by this part shall be tested by the National Bureau of Standards, Department of Commerce, and a report made by that bureau to the Commandant, who shall then determine whether the said extinguisher shall be approved for use on vessels subject to inspection.

34.25–5 Hand fire extinguishers; marking—TB/ALL. Every fire extinguisher approved after May 31, 1921, for use on vessels under the jurisdiction of the Coast Guard shall have affixed thereto a metallic name plate having plainly stamped thereon the name of the fire extinguisher, the rated capacity in gallons, quarts, or pounds, and the name and address of the person or firm for whom approved.

34.25-10 Hand fire extinguishers; location—TB/ALL. (a) Hand fire extinguishers shall be located in such parts of the tank vessel as in the opinion of the Officer in Charge, Marine Inspection, will be most convenient and serviceable in case of emergency and so arranged that they may be easily removed from their fastenings.

(b) One of the hand fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

(c) Hand fire extinguishers in which the medium is stored under pressure shall not be kept in passenger or crew accommodations.

34.25-15 Hand fire extinguishers; inspection—TB/ALL. Every fire extinguisher shall be discharged and examined at each annual inspection: *Provided*, That carbon tetrachloride fire extinguishers shall be tested for their pumping efficiency and the liquid discharged with proper care so that it may be replaced in the extinguishers. Carbon dioxide fire extinguishers shall be checked by weighing to determine contents, and, if found to be more than 10 percent under required contents of carbon dioxide, they shall be recharged.

34.25-20 Hand fire extinguishers; spare charges and parts—TB/ALL. (a) Extra charges shall be carried on board for 50 percent of each class of fire extinguishers required. If 50 percent of each class of fire extinguishers carried gives a fractional result, extra charges and extra safety valve units shall be provided for the next largest whole number: *Provided*, That extra charges for carbon dioxide type fire extinguishers shall be considered either an additional carbon dioxide extinguisher or a 2½-gallon foam extinguisher, and for this 2½-gallon foam extinguisher no extra charge will be required.

(b) Recharges, particularly the acid used in charging soda-and-acid type of fire extinguisher, shall be packed in such manner that the filling operation (i. e., in recharging the extinguisher) can be performed without subjecting the person doing the recharging to undue risk of acid burns and shall be contained in Crown stopper type of bottle.

(c) Extra safety valve units shall be carried on board for 50 percent of all hand fire extinguishers of the foam type.

34.25-25 Hand fire extinguishers; number required on tank ships—T/ALL. (a) Tank ships shall be provided with chemical fire extinguishers as follows:

Size of tank ship, gross tons:	*Minimum number of fire extinguishers*
Not over 100	2
Over 100 and not over 500	3
Over 500 and not over 1,000	6
Over 1,000	8

(b) The number of fire extinguishers required by Paragraph (a) of this section is based on the ordinary 2½-gallon foam type fire extinguisher and other types of fire extinguishers may be substituted according to the following schedule: One 2½-gallon foam type fire extinguisher is equivalent to one 15-pound carbon dioxide type, or two 1-quart carbon tetrachloride type, or one 12-pound dry chemical type. A 2½-gallon soda-acid type fire extinguisher, or its equivalent in other approved water types, may be substituted for the required foam type fire extinguisher within the acommodation spaces and similar spaces where neither oil nor electrical fires are the primary anticipated hazard.

(c) No fire extinguisher of a capacity greater than 2½ gallons (or equivalent sizes of other types) shall be allowed a greater rating than the ordinary 2½-gallon size, but fire extinguishers of less capacity are allowable under Paragraphs (a) and (b) of this section when their total contents equal the required quantity on tank ships.

34.25-30 Hand fire extinguishers required on tank vessels of over 15 gross tons using oil as fuel—TB/ALL. (a) In boiler rooms, and machinery spaces which contain internal-combustion engines, there shall be provided at least two 2½-gallon foam type fire extinguishers or their equivalents as provided in Section 34.25-25. On tank ships these fire extinguishers shall be in addition to those provided in Section 34.25-25.

(b) Where gasoline is carried in a separate storage tank for use in an auxiliary lighting or wireless unit or work boats, at least two 2½-gallon foam type extinguishers or their equivalents, as required in Section 34.25-25, shall be provided, and such fire extinguishers shall be located within a reasonable distance of the gasoline storage tank.

SUBPART 34.30—FIRE AXES

34.30-1 Fire axes required—T/ALL. All tank ships shall be provided with fire axes as follows:

Size of tank ship, gross tons:	*Minimum number of fire axes*
Not over 50	1
Over 50 and not over 200	2
Over 200 and not over 500	3
Over 500 and not over 1,000	4
Over 1,000	5

34.30–5 Location and use of fire axes—T/ALL. All fire axes shall be located so as to be readily found in time of need, shall not be used for general purposes, and shall be kept in good condition.

SUBPART 34.35—SAND BOXES

34.35–1 Sand boxes required on tank vessels using oil as fuel under boilers—TB/ALL. (a) Tank vessels of 500 gross tons and under, using oil as fuel under boilers, shall be fitted with metal tanks in the space where such oil is used, containing 5 cubic feet of sand and a scoop or shaker for distributing the same, and such tank, sand, and scoop, when so provided may be considered as replacing one of the fire extinguishers required under Section 34.25–30 (a).

(b) Tank vessels of over 500 gross tons, using oil as fuel, under boilers, shall be fitted with metal tanks in the space where such oil is used, containing 10 cubic feet of sand and a scoop or shaker.

SUBPART 34.40—FIRE-FIGHTING EQUIPMENT FOR TANK BARGES

34.40–1 Portable extinguishing equipment for cargo spaces—B/ALL. (a) All tank barges of 100 gross tons and over, whose certificate requires that they be manned, and which are not equipped with a steam fire extinguishing system as required on a tank ship, shall be equipped with approved chemical, inert gas, or foam in the following quantities:

33 gallons of foam; or,

200 pounds of carbon dioxide; or,

7 gallons of carbon tetrachloride.

This is in addition to the hand extinguishers required in Section 34.40–5.

(b) The above equipment may be either portable or equipped with sufficient lengths of hose or piping to deliver the extinguishing agent to any point on deck or in the crew's accommodation. If portable extinguishers are used, each unit must weigh less than 55 pounds. Extinguishers shall be located in protected and accessible places but not immediately adjacent to cargo tank hatches and openings.

34.40–5 Hand fire extinguishers for quarters, pump room, and machinery spaces—B/ALL. (a) Each tank barge whose certificate requires that it be manned and each unmanned tank barge with pump room shall be provided with approved hand extinguishers located in or adjacent to the entrance of spaces, as follows:

(1) Living accommodations.

(2) Galley.

(3) Pump room.

(4) Pump engine room.

(5) Fireroom.

(b) The fire extinguishers at each location shall be not less than one of the equivalent amounts as follows:

(1) 2½ gallons of foam; or,

(2) 15 pounds of carbon dioxide; or,

(3) 2 quarts of carbon tetrachloride; or,

(4) 12 pounds dry chemical.

(c) In no event shall a manned tank barge or an unmanned tank barge with a pump room be provided with less than one of the equivalent quantities, as follows:

(1) 5 gallons of foam; or,

(2) 30 pounds of carbon dioxide; or,

(3) 4 quarts of carbon tetrachloride.

(d) Each unmanned tank barge not provided with a cargo pump room shall be equipped with at least one 2½-gallon foam-type fire extinguisher or the equivalent, which may be carried aboard the barge or the towing vessel while under way. When the barge is moored to the dock, such equipment shall be accessible, or equivalent equipment may be supplied by the terminal.

PART 35—OPERATIONS

SUBPART 35.01—SPECIAL OPERATING REQUIREMENTS

Sec.

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35.01–5 Sanitary condition and crew quarters—T/ALL.
35.01–10 Shipping papers—TB/ALL.
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35.05–1 Licensed officers and crews of tank ships—T/ALL.
35.05–5 Master required on tank ships—T/ALL.
35.05–10 Pilot required on tank ships—T/LBR.
35.05–15 Watchman for a tank barge—B/ALL.
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SUBPART 35.10—FIRE AND EMERGENCY REQUIREMENTS

35.10–1 Station bills, muster lists, and line-throwing appliance drills—T/ALL.
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SUBPART 35.15—CASUALTY OR ACCIDENT REPORTS

35.15–1 Notice of casualty and voyage records—TB/ALL.
35.15–5 Reports by engineers of accidents involving boilers or machinery—T/ALL.
35.15–10 Reports when a state of war exists—T/ALL.

SUBPART 35.20—NAVIGATION

35.20–1 Notice to mariners; aids to navigation—T/ALL.
35.20–5 Draft of tank ships—T/OC.
35.20–10 Steering gear test—T/ALL.
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SUBPART 35.25—ENGINE DEPARTMENT

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Sec.

35.30–10 Cargo tank hatches, ullage holes, and Butterworth plates—TB/ALL.
35.30–15 Nonsparking tools—TB/ALL.
35.30–20 Fresh air breathing apparatus—TB/ALL.
35.30–25 Explosives—TB/ALL.

SUBPART 35.35—CARGO HANDLING

35.35–1 Men on duty—TB/ALL.
35.35–5 Electric bonding—T/ALL.
35.35–10 Closing of scuppers and sea valves—TB/ALL.
35.35–15 Connecting cargo hose—TB/ALL.
35.35–20 Inspection prior to transfer of cargo—TB/ALL.
35.35–25 Approval to start transfer of cargo—TB/ALL.
35.35–30 "Declaration of Inspection" for tank ships—T/ALL.
35.35–35 Duties of senior deck officer during transfer operations—TB/ALL.
35.35–40 Conditions under which transfer operations shall not be commenced or if started shall be discontinued—TB/ALL.
35.35–42 Restrictions on vessel coming alongside a tank vessel while loading Grade A, B, or C cargo—TB/ALL.
35.35–45 Auxiliary steam, air, or electric current—B/ALL.
35.35–50 Termination of transfer operations—TB/ALL.
35.35–55 Transfer or stowage of other cargo or stores on tank vessels—TB/ALL.
35.35–60 Transfer of other cargo or stores on tank barges—B/ALL.
35.35–65 Cargo handling on unmanned tank barges—B/R.
35.35–70 Maintenance of cargo handling equipment—TB/ALL.
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SUBPART 35.40—MARKING OF FIRE AND EMERGENCY EQUIPMENT

35.40–1 General alarm bell switch—TB/ALL.
35.40–5 General alarm bells—TB/ALL.
35.40–10 Steam, foam or CO_2 fire smothering apparatus—TB/ALL.
35.40–15 Fire hose stations—TB/ALL.
35.40–20 Emergency breathing equipment—TB/ALL.
35.40–25 Fire extinguishers—TB/ALL.
35.40–30 Instructions for changing steering gear—TB/ALL.
35.40–35 Rudder orders—TB/ALL.
35.40–40 Vessel's name on equipment—TB/ALL.

AUTHORITY: Sections 35.01–1 to 35.40–40, inclusive, issued under R. S. 4405, 4417a, as amended, Section 2, 54 Stat. 1028, and Section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 291a, 463a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 35.01—SPECIAL OPERATING REQUIREMENTS

Section 35.01–1 Inspection prior to making repairs involving riveting, welding, burning, etc.—TB/ALL. (a) Riveting, welding, burning or like fire-producing operations shall not be undertaken within or on the boundaries of bulk cargo spaces or in spaces adjacent thereto, until an inspection has been made to determine that such operations can be undertaken with safety.

(b) Such inspection shall be made and evidenced as follows:

(1) When in a port in the continental United States, this inspection shall be made by a gas chemist certificated by the American Bureau of Shipping; however, if the services of such certified gas chemist are not reasonably available, the marine inspector, upon recommendation of the vessel owner and his contractor, or their representatives, shall select a person who, in the case of an individual vessel, shall be authorized to make the inspection. If the inspection indicates that such operations can be undertaken with safety, a certificate setting forth that fact in writing and qualified as may be required shall be issued by the certified gas chemist or the authorized person before the work is started.

(2) When not in such a port, this inspection shall be made by the senior officer present, who shall make an appropriate entry in the tank vessel's logbook.

35.01–5 Sanitary condition and crew quarters—T/ALL. (a) It shall be the duty of the master and chief engineer of every tank ship to see that such vessel and crew's quarters are kept in a sanitary condition.

(b) Crew quarters shall be kept in sanitary condition by daily cleaning and removal of rubbish, and by painting at regular intervals as needed. Floors shall be maintained in good condition to facilitate cleaning. Lighting, heating, and ventilation in quarters shall be maintained in satisfactory condition: *Provided, however,* That forced ventilation when installed may be closed down during transfer of cargo.

(c) Repairs or changes in electric wiring shall only be made with the approval of the chief engineer.

35.01–10 Shipping papers—TB/ALL. Each loaded tank vessel shall have on board a bill of lading, manifest, or shipping document giving the name of the consignee and the location of the delivery point, the kind, grades, and approximate quantity of each kind and grade of cargo, and for whose account the cargo is being handled. The tank vessel shall not be delayed in order to secure exact quantities of cargo. Such manifests or bills of lading may be made out by the master, master of the towing vessel, owner, or agent of the owner: *Provided, however,* That in the case of unmanned barges where shipping papers are not available, an entry in the logbook of the towing vessel giving the name of the shipper and location of shipping point, the name of the consignee and location of delivery point, the approximate kind, grade, and quantity of cargo in each barge of the tow, and for whose account the cargo is being handled, shall be considered as complying with the requirements of this section.

35.01–15 Carriage of persons other than crew—TB/ALL. No person not connected with the operation of a tank ship or tank barge or not having legitimate business with said vessel, shall be permitted aboard while vessel is under way unless specifically allowed by its certificate.

SUBPART 35.05—OFFICERS AND CREWS

35.05–1 Licensed officers and crews of tank ships—T/ALL. No tank ship of the United States shall be navigated unless she shall have in her service and on board such complement of licensed officers and crew, including certificated lifeboatmen and certificated tankermen where required by the regulations in this subchapter, separately stated, as called for in her certificate of inspection.

35.05–5 Master required on tank ships—T/ALL. There shall be a duly licensed master on board every tank ship of more than 150 gross tons, whenever such tank ship is under way.

35.05–10 Pilot required on tank ships—T/LBR. (a) No tank ship shall be navigated unless she shall have in her service and on board either a licensed master or pilot as called for in her certificate of inspection.

(b) The navigation of every tank ship above 150 gross tons shall be under the control of a first-

class pilot, and every such pilot shall be limited in his license to the particular service for which he is adapted.

(c) A first-class pilot or a second-class pilot who has reached the age of 21 years may act as master or pilot in charge of the navigation of a tank ship not exceeding 150 gross tons. A second-class pilot is authorized to act as pilot in charge of a watch on any tank ship within the tonnage specified in his license.

35.05–15 Watchman for a tank barge—B/ALL—(a) Manned barge. At least one member of the crew of a manned tank barge shall be on board at all times except when the vessel is gas free or is moored at a dock or terminal at which watchman service is provided.

(b) Unmanned barge. On each normally unmanned barge in tow a strict watch shall be kept at all times from the towing vessel while the vessel is under way, and the same shall apply at all times while the barge is moored at a dock unles the barge is gas free or watchman service is provided or unless reasonable precaution is taken to prevent unauthorized persons from boarding the barge. These watchmen may be members of the regular complement of the towing vessel.

35.05–20 Physical condition of crew—TB/ALL. No persons shall be engaged as a member of the crew on a tank vessel if he is known by the employer to be physically or mentally incapable of performing the duties assigned him.

35.05–25 Illness, alcohol, drugs—TB/ALL. (a) No person, known by the individual in charge of a tank vessel to be under the influence of liquor or other stimulant, or to be ill to such an extent as to unfit him for any particular service on the tank vessel, shall be allowed to perform such service while in such condition.

(b) When a member of the crew of a tank vessel which is loading bulk cargo of Grade A, B, or C arrives at the gangway and is observed to be in an intoxicated condition, he shall not be permitted to board the vessel without escort.

SUBPART 35.10—FIRE AND EMERGENCY REQUIREMENTS

35.10–1 Station bills, muster lists, and line-throwing appliance drills—T/ALL. (a) It shall be the duty of the master of every tank ship over 500 gross tons to cause station bills and muster lists to be prepared before the vessel sails, which shall be signed by the master, who shall be responsible for their preparation. The station bills and muster lists shall be posted in conspicuous places in several parts of the tank ship, particularly in the crew's quarters, and must contain full particulars of the signals which will be used for calling the crew to their stations for emergency duties. Special duties shall be allotted to each member of the crew and the muster list shall show all these special duties and indicate the station to which each man must go and the duties he has to perform. The special duties should, as far as possible, be comparable to the regular work of the individual.

(b) The duties provided for by the muster lists should include:

(1) The closing of airports, watertight doors, fire doors, and fire screens, the covers and all valves of all scuppers, sanitary and other discharges which lead through the ship's hull below the margin line, and stopping the fans and ventilating systems.

(2) The extinction of fire.

(3) The equipment of lifeboats, life rafts, and buoyant apparatus and their preparation for launching.

(c) The master of a tank ship equipped with a line-carrying gun shall drill his crew in its use every 3 months, but the actual firing of the gun on the tank ship shall be discretionary with the master. Each drill shall be recorded in the ship's log book.

35.10–5 Emergency signals; fire and lifeboat drills—T/ALL. (a) The general fire-alarm signal shall be continuous rapid ringing of the ship's bell for a period not less than 10 seconds supplemented by the continuous ringing of the general alarm bells for not less than 10 seconds. For dismissal from fire-alarm stations, the general alarm bells should be sounded three times, supplemented by three short blasts of the whistle. The signal for lifeboat drill or lifeboat stations shall be more than six short blasts and one long blast of the whistle, supplemented by the same signal on the general alarm bells. Where whistle signals are used to direct the handling of lifeboats they shall be as follows:

(1) To lower lifeboats, one short blast of the whistle.

(2) To stop lowering the lifeboats, two short blasts of the whistle.

(3) For dismissal from lifeboat stations, three short blasts of the whistle: *Provided*, That on river tank ships the whistle signals specified herein may be made on the ship's bell.

(b) The master of any tank ship may establish such other emergency signal, in addition to the above, as will provide that all the officers and all the crew of the tank ship will have positive and certain notice of the existing emergency.

(c) The master may organize a squad to be used for emergency duties (other than a general emergency), or crew practices, and the nature of the signals or other means for assembling the squad remains within the discretion of the master. Such signals should not conflict with the navigational signals or the signals used for a general alarm.

(d) It shall be the duty of the master, or the mate, or officer next in command, once at least in each week, to call all hands to quarters and exercise them in discipline, and (weather permitting), in the unlashing and swinging out of the lifeboats, the closing of all hand or power-operated watertight doors which are in use at sea, closing all fire doors and fire screens, the use of fire pumps, and all other apparatus for the safety of life on board of such vessels with special regard for the drill of the crew in the method of adjusting life preservers, and to see that all the equipments required by law are in complete working order for immediate use. The fact of exercise of the crew as herein contemplated, shall be entered upon the ship's log book.

(e) This section relating to fire and lifeboat drills contemplates that such drills shall be conducted precisely as though an emergency existed. To accomplish the purpose of this section, lifeboat covers and strongbacks shall be removed, plugs or caps put in place, boat ladders secured in position for use, painters carried forward and tended so as to provide a good lead and slack to hold the boat in position under the davits when in the water. The person in charge of each lifeboat or life raft should have a list of its crew and should see that the men under his orders are acquainted with their several duties. The motor and the hand-operated propeller gear of each lifeboat shall be operated for a period of not less than 5 minutes once at least in every 7 days, in order that it may be ready for service at any time. Such operation shall be made a part of the report of such drill. The hand pumps and fire pump shall be operated long enough and a sufficient number of outlets used to insure that such equipment is in order and effectual. When oxygen-breathing apparatus, gas masks, or other special equipment is carried, certain members of the crew shall be trained in the use of the equipment.

(f) The entries in the ship's log book relating to the exercise of the crew in fire and lifeboat drills shall state the day of the month and the hour when so exercised, length of time of the drill, number of the lifeboats swung out, number of lengths of fire hose used, and a statement of the condition of all fire and lifesaving apparatus.

(g) Any neglect or omission on the part of the officer in command of such vessels to strictly enforce the provisions of this section shall be deemed cause for proceedings under the provisions of R. S. 4450, as amended (46 U. S. C. 239), looking to a suspension or revocation of the license of such officer.

(h) It shall be the duty of the master to require the officers and crew of all tank ships to perform the aforesaid drills and discipline in the presence of marine inspectors at intervals sufficiently frequent to assure the said inspectors, by actual observance, that the foregoing requirements of this section are complied with by the officers and the crew.

(i) A copy of this section shall be furnished to each tank ship to which it applies. This placard form shall be framed under glass and posted in a conspicuous place.

35.10–10 Posting placard containing instructions regarding use of breeches buoy—T/OCL. A placard, Form CG 811, containing instructions for the use of breeches buoy gear shall be posted in the pilothouse, engine room, and seamen's, firemen's and steward's departments of every tank ship of 150 gross tons or over navigating ocean or coastwise routes or the Great Lakes.

SUBPART 35.15—CASUALTY OR ACCIDENT REPORTS

35.15–1 Notice of casualty and voyage records—TB/ALL. (a) The owner, agent, master, or person in charge of a vessel involved in a marine casualty shall give notice as soon as possible to the nearest marine inspection office of the United States Coast Guard whenever the casualty results in any of the following:

(1) Damage to property in excess of $1,500.00.

(2) Material damage affecting the seaworthiness or efficiency of a vessel.

(3) Stranding or grounding.

(4) Loss of life.

(5) Injury causing any person to remain incapacitated for a period in excess of 72 hours; except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

(b) The notice required by paragraph (a) of this section shall show the name and official number of the vessel involved, the owner or agent thereof, the nature and probable cause of the casualty, the locality in which it occurred, the nature and extent of injury to persons and the damage to property.

(c) In addition to the notice required by paragraph (a) of this section, the person in charge of the vessel shall, as soon as possible, report in writing and in person to the Officer in Charge, Marine Inspection, at the port in which the casualty occurred or nearest the port of first arrival: *Provided*, That when from distance it may be inconvenient to report in person it may be done in writing only. The written report required herein for personal accident not involving death shall be made on Form CG 924E and for all other marine casualties or accidents the written report shall be made on Form CG 2692.

NOTE: If filed without delay these forms may also provide the notice required by paragraph (a) of this section.

(d) The owner, agent, master, or other person in charge of any vessel involved in a marine casualty shall retain such voyage records of the vessel as are maintained by the vessel, such as both rough and smooth deck and engine room logs, bell books, navigation charts, navigation work books, compass deviation cards, gyrocompass records, stowage plans, record of draft, aids to mariners, radiograms sent and received, the radio log and crew and passenger lists. The owner, agent, master, or other officer in charge, shall make those records available to a duly authorized Coast Guard officer or employee for examination upon request.

(e) Whenever a vessel collides with a lightship, buoy, or other aid to navigation under the jurisdiction of the Coast Guard, or is connected with any such collision, it shall be the duty of the person in charge of such vessel to report the accident to the nearest Officer in Charge, Marine Inspection. No report on Form CG 2692 is required unless one or more of the results listed in Paragraph (a) of this section occurs.

35.15–5 Reports by engineers of accidents involving boilers or machinery—T/ALL. It shall be the duty of the engineer in charge when an accident occurs to the boilers or machinery tending to render the further use of such boilers and machinery unsafe until repairs are made to report the same to the Officer in Charge, Marine Inspection, at the port in which the accident occurred or nearest the port of first arrival, immediately upon the arrival of the tank ship at the first port reached subsequent to the accident.

35.15–10 Reports when a state of war exists—T/ALL. During the period when a state of war exists between the United States and any foreign nation, communications in regard to casualties or accidents shall be handled with caution and the reports shall not be made by radio or by telegram.

SUBPART 35.20—NAVIGATION

35.20–1 Notice to mariners; aids to navigation—T/ALL. (a) Licensed officers are required to acquaint themselves with the latest information published by the United States Coast Guard and the United States Navy regarding aids to navigation, and neglect to do so is evidence of neglect of duty. It is desirable that vessels navigating oceans and coastwise and Great Lakes waters shall have available in the pilothouse for convenient reference at all times a file of the applicable Notice to Mariners. All vessels shall have charts of the waters on which they operate for convenient reference at all times.

(b) Notice to Mariners, published weekly by the United States Coast Guard, which contains announcements and information regarding aids to navigation and charts of waters of the United States, is available for free distribution at the following places: Field offices of the U. S. Coast Guard: U. S. Coast and Geodetic Survey field stations: and the Marine Division, Custom House. Notice to Mariners, published weekly by the U. S. Navy for the correction of charts, sailing directions, light lists, and other publications, and which includes foreign waters and certain waters of the United States, is available for free distribution at the Hydrographic Office, Branch Hydrographic Offices, or any other agencies of seaboard ports, and is also on file in the United States consulates, where it may be inspected.

35.20-5 Draft of tank ships—T/OC. The master of every tank ship shall, whenever leaving port, enter the maximum draft of his vessel in the log book.

35.20-10 Steering gear test—T/ALL. On all tank ships making voyages of more than 48 hours' duration, the entire steering gear, the whistle, the means of communication, and the signaling appliances between the bridge or pilothouse and engine room shall be examined and tested by a licensed officer of the vessel within a period of not more than 12 hours before leaving port. All such vessels making voyages of less than 48 hours' duration or operating on lakes, bays, sounds, and rivers shall be so examined and tested at least once in every week. The fact and time of such examination and test shall be recorded in the ship's log book.

35.20-15 Steering orders—TB/ALL. (a) For all tank vessels fitted with rudders, the following steering orders shall be given in the direct sense as follows:

(1) "Right rudder" shall be given only when it is intended that the wheel, the rudder blade, and the head of the ship should go to the right.

(2) "Left rudder" shall be given only when it is intended that the wheel, the rudder blade, and the head of the ship should go to the left.

(b) Where rudder indicators are provided, they shall be installed consistent with the requirements in Paragraph (a) of this section.

35.20-20 Lookouts—T/OC. All tank ships navigating the ocean during the nighttime shall have a lookout at all times at or near the bow. Nothing in this section shall exonerate any master or officer in command from the consequences of any neglect to keep a proper lookout or the neglect of any precaution which may be required by the ordinary practice of seamen or by the special circumstances of the case.

35.20-25 Unauthorized lights—T/ALL. Any master or pilot of any vessel who shall authorize or permit the carrying of any light, electric or otherwise, not required by law that in any way will interfere with distinguishing the signal lights may be proceeded against in accordance with the provisions of R. S. 4450 (46 U. S. C. 239), as amended, looking to a revocation or suspension of his license.

35.20-30 Flashing the rays of a searchlight or other blinding light—T/ALL. Flashing the rays of a searchlight or other blinding light onto the bridge or into the pilothouse of any vessel under way is prohibited. Any person who shall flash or cause to be flashed the rays of a blinding light in violation of the above may be proceeded against in accordance with the provision of R. S. 4450, as amended (46 U. S. C. 239), looking to the revocation or suspension of his license or certificate.

35.20-35 Whistling — T/ALL. Unnecessary sounding of vessel's whistle is prohibited within any harbor limits of the United States. Whenever any licensed officer in charge of any tank ship shall authorize or permit such unnecessary whistling, such officer may be proceeded against in accordance with the provisions of R. S. 4450, as amended (46 U. S. C. 239), looking to a revocation or suspension of his license.

SUBPART 35.25—ENGINE DEPARTMENT

35.25-1 Examination of boilers and machinery by engineer—T/ALL. It shall be the duty of an engineer when he assumes charge of the boilers and machinery of a vessel to examine the same forthwith and thoroughly. If he finds any part thereof in bad condition, he shall immediately report the facts to the master, owner, or agent, and to the nearest Officer in Charge, Marine Inspection, who shall thereupon investigate the matter,

and if the former engineer has been wilfully negligent in the performance of his duties, he may be proceeded against under the provisions of R. S. 4450, as amended (46 U. S. C. 239), looking to a suspension or revocation of his license.

35.25–5 Reports of repairs, and unsafe boilers and machinery by engineers—T/ALL. (a) Before making repairs to a boiler of a tank ship, the engineer in charge of such tank ship shall report, in writing, the nature of such repairs to the Officer in Charge, Marine Inspection, of the district wherein such repairs are to be made.

(b) It shall be the duty of the engineer in charge when the boilers or machinery, by reason of ordinary wear, have become unsafe, to report the same to the Officer in Charge, Marine Inspection, immediately upon the arrival of the vessel at the first port reached subsequent to the discovery of such unsafe condition by said engineer.

35.25–10 Requirements for fuel oil—T/ALL. (a) Oil to be used as fuel to be burned under boilers on tank ships shall have a flash point of not less than 150° F. (closed cup test).

(b) It shall be the duty of the chief engineer to make an entry in the log of each supply of fuel oil received on board, stating the quantity received, the name of the vendor, and the flash point (closed cup test) for which it is certified by the vendor.

(c) It shall be the further duty of the chief engineer to draw and seal at the time the supply is received on board, a half-pint sample of each lot of fuel oil, such sample to be preserved until that particular supply of oil is exhausted.

SUBPART 35.30—GENERAL SAFETY RULES

35.30–1 Warning signals and signs—TB/ALL—(a) Red warning signals. During transfer of bulk cargo while fast to a dock, a red signal (flag by day and electric lantern at night) shall be so placed that it will be visible on all sides. While transferring bulk cargo at anchor, a red flag only shall be displayed.

(b) Warning sign at gangway. (1) Warning placards should be kept at hand for display while a vessel is fast to a dock during transfer of cargo, to warn persons approaching the gangway. The placard shall state in letters not less than 2 inches high substantially as follows:

WARNING
No open lights.
No smoking.
No visitors.

(2) Where poisonous cargoes are being transferred the warning sign shall also include the word "Poison" to indicate the nature of the liquid being handled. (See Part 39 of this subchapter.)

(c) Warning sign in radio room. A sign shall be placed in radio room warning against the use of radio equipment during transfer of Grade A, B, or C liquids, except by permission of senior deck officer.

35.30–5 Fires, matches, and smoking—TB/ALL—(a) General. In making the determinations required under paragraphs (b), (c) and (d) of this section the senior deck officer on duty, who shall be a licensed officer or certificated tankerman, shall exercise his skill and experience with due regard to attendant conditions and circumstances, including consideration for location of shore side facilities, maintenance of mobility, provision for fire protection, state or change of winds, tides, sea, weather conditions, forces of nature and other circumstances generally beyond human control.

(b) Boiler fires. Boiler fires are normally permitted during cargo transfer operations: *Provided*, That prior to loading Grades A, B, and C cargoes, the senior deck officer on duty, who shall be a licensed officer or certificated tankerman, shall make an inspection to determine whether in his judgment boiler fires may be maintained with reasonable safety during the loading operation.

(c) Galley fires. Galley fires are normally permitted during cargo transfer operations: *Provided*, That prior to loading Grades A, B, and C cargoes the senior deck officer on duty, who shall be a licensed officer or certificated tankerman, shall make an inspection to determine whether in his judgment galley fires may be maintained with reasonable safety during the loading operation.

(d) Smoking. Smoking is prohibited on the weather decks of tank vessels when they are not gas free or are alongside docks. At other times and places the senior deck officer on duty, who shall be a licensed officer or certificated tankerman, shall designate when and where the crew may smoke: *Provided*, That prior to loading Grade A, B, or

C cargo the master or senior deck officer on duty shall make an inspection to determine if and where, in his judgment, smoking may be permitted with reasonable safety during the loading operation.

(e) Matches. The use of other than safety matches is forbidden aboard tank vessels at all times.

35.30-10 Cargo tank hatches, ullage holes, and Butterworth plates—TB/ALL. No cargo tank hatches, ullage holes, or Butterworth plates shall be opened or shall remain open without flame screens, except under the supervision of the senior member of the crew on duty, unless the tank opened is gas free.

35.30-15 Nonsparking tools—TB/ALL. Nonsparking tools shall be provided for opening and closing cargo hatch covers.

35.30-20 Fresh air breathing apparatus—TB/ALL. (a) All manned tank vessels having tanks which exceed 15 feet in depth, measured from the deck to the lowest point at which cargo is carried, and all tank ships of 1,000 gross tons and over shall be provided with an outfit as follows:

(1) One approved fresh air breathing apparatus, including belt and life line. The length of the air hose shall be sufficient to reach from the open deck, well clear of hatch or doorway, to any part of the holds, tanks, or machinery spaces.

(2) One approved 3-cell, explosion-proof flashlight, constructed in accordance with Subpart 161.008 of Subchapter Q (Specifications) of this chapter.

(3) One fire ax.

35.30-25 Explosives—TB/ALL. Fulminates or other detonating compounds in bulk in dry condition; explosive compositions that ignite spontaneously or undergo marked decomposition when subjected for forty-eight consecutive hours to a temperature of 167° F. or more; compositions containing an ammonium salt and a chlorate; and other like explosives shall not be accepted, stored, stowed or transported on board tank vessels.

SUBPART 35.35—CARGO HANDLING

35.35-1 Men on duty—TB/ALL. A sufficient number of the crew shall be on duty to perform transfer operations. In the case of unmanned barges, a person holding a valid license as master, mate, pilot, or engineer, or a certificated tankerman may be supplied by a terminal.

35.35-5 Electric bonding—T/ALL. A tank vessel may be electrically connected to the shore piping, through which the cargo is to be transferred, prior to the connecting of a cargo hose. This electrical connection, if made, shall be maintained until after the cargo hose has been disconnected and any spillage has been removed.

35.35-10 Closing of scuppers and sea valves—TB/ALL. Deck officer in charge shall see that all scuppers are properly plugged during transfer operations except on tank vessels using water for deck cooling. Sea valves shall be closed and lashed, or sealed to indicate that they should not be open during all cargo loading operations. Under no circumstances shall such valves be secured by locks.

35.35-15 Connecting cargo hose—TB/ALL. (a) Sufficient hose shall be used to provide for movement of the tank vessel. Gaskets shall be used in every hose joint and in couplings to pipelines; and where bolted flanged joints are used a sufficient number of bolts shall be used to secure a tight connection. Under no circumstances, shall less than three bolts be used in a bolted flanged coupling. When cargo hose is supported by ship's tackle, the senior deck officer on duty shall see that sufficient tackles are used.

(b) Pans or buckets shall be placed under cargo hose connections on the tank vessel.

35.35-20 Inspection prior to transfer of cargo—TB/ALL. Prior to the transfer of cargo, the senior deck officer on duty, who shall be a licensed officer or certificated tankerman, shall inspect the vessel to assure himself that the following conditions exist:

(a) Warnings are displayed as required.

(b) No repair work in way of cargo spaces is being carried on without his permission.

(c) Cargo hose is connected and cargo valves are set.

(d) All cargo connections for the loading of Grades A, B, and C cargoes have been made to the vessel's pipe-lines and not through open end hose in a hatch.

(e) In loading Grades A, B, and C cargoes, there are no fires or open flames present on the deck, or in any compartment which is located on,

facing, open, and adjacent to that part of the deck on which cargo hose is connected.

(f) The shore terminal or the other tank vessel concerned has reported itself in readiness for transfer of cargo.

(g) All sea valves connected to the cargo piping system are closed.

(h) In loading Grades A, B, and C cargoes, that an inspection has been made to determine whether boiler fires can be maintained with reasonable safety.

(i) In loading Grades A, B, and C cargoes, that an inspection has been made to determine whether galley fires can be maintained with reasonable safety.

(j) In loading Grades A, B, and C cargoes, that an inspection has been made to determine whether smoking may be permitted with reasonable safety.

(k) On tank ships the construction or conversion of which is started on or after July 1, 1951, which are to load or discharge Grade A cargo, all openings in the top of the tanks, except the branch vent lines and covers to ullage hole sounding pipes, are tightly closed. (See §§ 32.20–20 and 32.55–20 of this subchapter.)

(l) On tank ships the construction or conversion of which is started on or after July 1, 1951, which are to load or discharge Grade A cargo, the method for determining the liquid level in the tank without opening ullage holes, cargo hatches or Butterworth plates is in proper order. (See § 32.20–20 of this subchapter.)

35.35–25 Approval to start transfer of cargo—TB/ALL. When the senior deck officer on duty has assured himself that the requirements of §§ 35.35–20 and 35.35–30 have been met, he may give his approval to start operations.

35.35–30 "Declaration of Inspection" for tank ships—T/ALL. After completing the inspection required by § 35.35–20 and prior to giving his approval to start the cargo transfer operation, the master or senior deck officer on duty shall fill in the following Declaration of Inspection in duplicate. The original of the Declaration of Inspection shall be kept aboard for the information of authorized persons. The duplicate, where required, shall be handed to the terminal superintendent or his representative, who shall on demand be given the opportunity to satisfy himself that the condition of the vessel is as stated in the Declaration of Inspection.

DECLARATION OF INSPECTION PRIOR TO BULK CARGO TRANSFER

Date _____

S _____ Port of _____

I, _____, being the master or senior deck officer in charge of the transfer of bulk inflammable and combustible cargo about to be undertaken, do certify that I have personally inspected this vessel with reference to the following requirements set forth in § 35.35–20 and that opposite each of them I have indicated that the regulations have been complied with.

(1) Are warnings displayed as required?

(2) Is there any repair work in way of cargo spaces being carried on for which permission has not been given?

(3) Is cargo hose of sufficient length properly connected and supported and are cargo valves properly set?

(4) Have all cargo hose connections for loading Grades A, B, and C cargoes been made to the vessel's pipe-lines?

(5) Are there any fires or open flames present on the deck or in any compartment which is located on, facing, open and adjacent to that part of the deck on which the cargo hose is connected?

(6) Has the shore terminal or other tank vessel concerned reported itself in readiness for transfer of cargo?

(7) Are sea valves connected to the cargo system closed?

(8) If Grades A, B, and C cargoes are to be loaded and boiler fires are lighted, has an inspection been made to determine that they may be operated with reasonable safety?

(9) If Grades A, B, and C cargoes are to be loaded and galley fires are lighted, has an inspection been made to determine that they may be operated with reasonable safety?

(10) If Grades A, B, and C cargoes are to be loaded, has an inspection been made to determine whether smoking is to be permitted?

(11) If smoking is to be permitted, have spaces been designated for this purpose?

35.35–35 Duties of senior deck officer during transfer operations—TB/ALL. The senior deck

officer on duty shall control the operations as follows:

(a) Supervise the operations of cargo system valves.

(b) Start transfer of cargo slowly.

(c) Observe hose and connections for leakage.

(d) Observe operating pressure on cargo system.

(e) Observe rate of loading for the purpose of avoiding overflow of tanks.

35.35-40 Conditions under which transfer operations shall not be commenced or if started shall be discontinued—TB/ALL. Cargo transfer operations shall not be started or, if started, shall be discontinued under the following conditions:

(a) During severe electrical storms.

(b) If a fire occurs on the wharf or on the tanker or in the vicinity.

35.35-42 Restrictions on vessel coming alongside a tank vessel while loading Grade A, B, or C cargo—TB/ALL. (a) No vessel shall come alongside or remain alongside a tank vessel in way of its cargo tanks while it is loading Grade A, B, or C cargo without having the permission of the officer-in-charge of the vessel which is loading.

(b) No vessel shall come alongside or remain alongside a tank vessel in way of its cargo tanks while it is loading Grade A, B, or C cargo unless the conditions then prevailing are mutually acceptable to the officers-in-charge of cargo handling on both vessels.

35.35-45 Auxiliary steam, air, or electric current—B/ALL. When discharging cargo from one or more barges, the towing vessel may furnish steam, air, or electric current for pumps on barges or dock, but in no case shall the cargo pass through or over the towing vessel.

35.35-50 Termination of transfer operations—TB/ALL. When transfer operations are completed the valves on hose connections on vessels shall be closed. The cargo hose shall be drained of cargo.

35.35-55 Transfer or storage of other cargo or stores on tank vessels—TB/ALL. (a) Package goods, freight, and ships' stores shall not be loaded or discharged during the loading of Grade A, B, or C products except by permission of the senior deck officer on duty. Explosives as cargo shall not be loaded or carried on any tank vessel containing Grade A, B, or C cargo.

(b) Where package and general cargo is carried directly over bulk cargo tanks, it shall be properly dunnaged to prevent chafing of metal parts and securely lashed or stowed.

35.35-60 Transfer of other cargo or stores on tank barges—B/ALL. (a) Tank barges may be permitted to transport deck cargoes directly over bulk cargo spaces when the nature of such deck cargoes, and the method of loading and unloading same does not create an undue hazard. Such vessels shall have their decks properly dunnaged to prevent chafing between the steel parts of the vessel and the deck cargo.

(b) Vents on cargo tanks of tank barges which transport general cargo directly over bulk cargo spaces shall be extended to an elevation above that at which the general cargo over such spaces is stowed.

35.35-65 Cargo handling on unmanned tank barges—B/R. The duties prescribed for officers and crew in this subpart shall, in the case of unmanned barges operating on inland waters tributary to the Gulf of Mexico, devolve upon the person or persons who in fact accomplish the operations described and who may not be members of the crew of the towing vessel.

35.35-70 Maintenance of cargo handling equipment—TB/ALL. The cargo handling equipment shall be maintained by the tank vessel's personnel in accordance with the regulations in this subchapter, including the following:

(a) Cargo hose shall not be used in transfer operations in which the pressures are such that leakage of cargo occurs through the body of the hose.

(b) Cargo pump relief valves shall be tested at least once each year to determine that they function satisfactorily at the pressure at which they are set to open.

(c) Cargo pump pressure gage shall be tested at least once a year for accuracy.

(d) The cargo discharge piping of all tank vessels shall be tested at least once each year for tightness, at the maximum working pressure.

35.35-75 Emergencies—TB/ALL. In case of emergencies nothing in the regulations in this sub-

chapter shall be construed as preventing the senior officer present from pursuing the most effective action in his judgment for rectifying the conditions causing the emergency.

SUBPART 35.40—MARKING OF FIRE AND EMERGENCY EQUIPMENT

35.40-1 General alarm bell switch—TB/ALL. The general alarm bell switch in the pilothouse or fire-control station shall be clearly marked with lettering on a brass plate or with a sign in red letters on suitable background: "GENERAL ALARM."

35.40-5 General alarm bells — TB/ALL. General alarm bells shall be marked in not less than ½-inch red letters: "GENERAL ALARM—WHEN BELL RINGS GO TO YOUR STATION."

35.40-7 Carbon dioxide alarm—T/ALL. Adjacent to all carbon dioxide fire extinguishing alarms installed after November 19, 1952, there shall be conspicuously marked: "WHEN ALARM SOUNDS VACATE AT ONCE. CARBON DIOXIDE BEING RELEASED."

35.40-10 Steam, foam, or CO_2 fire smothering apparatus—TB/ALL. Steam, foam or CO_2 fire smothering apparatus shall be marked: "STEAM FIRE APPARATUS" or "FOAM FIRE APPARATUS" or "CO_2 FIRE APPARATUS," as appropriate, in not less than 2-inch red letters. The valves of all branch pipes leading to the several compartments shall be distinctly marked to indicate the compartments or parts of the vessel to which they lead.

35.40-15 Fire hose stations—TB/ALL. At each fire hose valve there shall be marked in not less than 2-inch red letters and figures: "FIRE STATION 1," 2, 3, etc.

35.40-20 Emergency breathing equipment—TB/ALL. Lockers or spaces where oxygen or fresh air breathing apparatus is stowed shall be marked: "OXYGEN BREATHING APPARATUS" or "FRESH AIR BREATHING APPARATUS" as appropriate.

35.40-25 Fire extinguishers—TB/ALL. Each fire extinguisher shall be marked with a number and the location where stowed shall be marked in corresponding numbers in ½-inch figures.

35.40-30 Instructions for changing steering gear—TB/ALL. Instructions in at least ½-inch letters and figures shall be posted at each emergency steering station and in the steering engine room, relating in order, the different steps to be taken in changing to the emergency steering gear. Each clutch, gear, wheel, lever, valve or switch which is used during the changeover shall be numbered or lettered on a brass plate or painted so that the markings can be recognized at a reasonable distance. The instructions shall indicate each clutch or pin to be "in" or "out" and each valve or switch which is to be "opened" or "closed" in shifting to any means of steering for which the vessel is equipped. Instructions shall be included to line up all steering wheels and rudder amidship before changing gears.

35.40-35 Rudder orders—TB/ALL. At all steering stations, there shall be installed a suitable notice on the wheel or device or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the wheel or device must be turned for "right rudder" or "left rudder."

35.40-40 Vessel's name on equipment—TB/ALL. The equipment of all tank vessels, such as fire hose, fire axes, lifeboats, life rafts, life preservers and buoyant apparatus, shall be painted or branded with the name of the vessel upon which they are used.

PART 38—LIQUEFIED PETROLEUM GASES

SUBPART 38.01—GENERAL

Sec.

38.01–1 Scope of regulations—TB/ALL.
38.01–5 Certificate of inspection—TB/ALL.

SUBPART 38.05—DESIGN AND INSTALLATION OF TANKS

38.05–1 Design and construction—TB/ALL.
38.05–5 Markings—TB/ALL.
38.05–10 Installation—TB/ALL.
38.05–15 Cargo tanks on barges—B/ALL.
38.05–20 Lagging—TB/ALL.
38.05–25 Refrigerated systems—TB/ALL.

SUBPART 38.10—PIPING, VALVES, FITTINGS AND ACCESSORY EQUIPMENT

38.10–1 Valves and accessories—TB/ALL.
38.10–5 Installation of excess flow valves and back pressure check valves—TB/ALL.
38.10–10 Piping and fittings—TB/ALL.
38.10–15 Safety relief valves—TB/ALL.
38.10–20 Liquid level gaging devices—TB/ALL.

SUBPART 38.15—SPECIAL CARGO HANDLING REQUIREMENTS

38.15–1 Filling densities—TB/ALL.
38.15–5 Cargo hose—TB/ALL.
38.15–10 Electrical bonding—TB/ALL.

SUBPART 38.20—VENTING AND VENTILATION

38.20–1 Venting—T/ALL.
38.20–5 Venting—B/ALL.

SUBPART 38.25—PERIODIC INSPECTIONS AND TESTS

38.25–1 Periodic inspections—TB/ALL.
38.25–5 Hydrostatic tests—TB/ALL.
38.25–10 Removal of defective tanks—TB/ALL.
38.25–15 Safety valves—TB/ALL.

AUHTORITY: Sections 38.01–1 to 38.25–15, inclusive, issued under R. S. 4405, and 4417a, as amended, and Section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 391a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 38.01—GENERAL

Section 38.01–1 Scope of regulations—TB/ALL. The regulations in this part contain requirements for the transportation in fixed independent cargo tanks of liquefied petroleum gases in bulk. The regulations covering the transportation in portable tanks of liquefied petroleum gases are contained in Parts 146 and 147 of Subchapter N (Explosives or Other Dangerous Articles on Board Vessels) of this chapter.

38.01–5 Certificate of inspection—TB/ALL. The certificate of inspection shall be endorsed for the carriage of liquefied petroleum gases as follows:

> Inspected and approved for the carriage of liquefied petroleum gases having vapor pressures not exceeding ------ lbs. per square inch gage at 115° F.

SUBPART 38.05—DESIGN AND INSTALLATION OF CARGO TANKS

38.05–1 Design and construction—TB/ALL. (a) Cargo tanks shall meet the requirements for Class II arc welded unfired pressure vessels, fabricated, inspected, and tested in accordance with the applicable requirements of Parts 50 to 57, inclusive, of Subchapter F (Marine Engineering) of this chapter, except as provided otherwise in this part.

(b) Each cargo tank shall be designed for a pressure of not less than the vapor pressure, in pounds per square inch gage, of the gas at 115° F., but for not less than 100 pounds per square inch gage, except as provided in § 38.05–25.

(c) The shell and head thickness of any tank shall not be less than ¼ inch.

(d) Each tank shall be provided with a 15-inch by 18-inch or an 18-inch diameter, minimum, manhole fitted with a cover located above the maximum liquid level and as close to the top of the tank as possible. Where access trunks or necks are fitted to tanks, the diameter of the trunks or necks shall be 30 inches minimum.

38.05–5 Markings—TB/ALL. (a) Upon satisfactory completion of tests and inspection, the inspector shall require the following marking, at least ⅜-inch high, to be stamped into the metal of the tank or stamped into a nonferrous plate permanently attached to the tank by means of welding or brazing, using high melting point brazing metal.

Name and address of manufacturer		
---------- p. s. i.	---------- p. s. i.	
Design pressure	Shop test pressure	
----------	----------	
Inspector's No.	Initials and CG Symbol	
----------	----------	----------
Mfr's Serial No.	Date of manufacture	Water capacity, U. S. gallons

(b) In addition to the markings described in Paragraph (a) of this section, the following inscription shall be placed on the tank or a corrosion-resistant plate containing these data shall be securely attached thereon:

This tank shall not contain a product having a vapor pressure in excess of ------ p. s. i. gage at 115° F.

(c) All tank inlet and outlet connections, except safety relief valves, liquid level gaging devices and pressure gages shall be labeled to designate whether they communicate with vapor or liquid space. Labels may be attached to valves.

(d) All tank markings shall be permanently and legibly stamped in a readily visible position, and shall not be obscured by painting.

38.05-10 Installation—TB/ALL. (a) Cargo tanks shall be independent of the hull and installed with a clearance of not less than 24 inches from the vessel's sides. A working space of not less than 15 inches shall be provided around and beneath each tank or else provision shall be made for moving such tanks to secure adequate space for the inspection and maintenance of the vessel's structure and tanks. See § 38.05-15 for additional requirements applicable only to tank barges.

(b) Tanks may be located in dry cargo holds or in other cargo tanks meeting the requirements for cofferdams as prescribed in § 32.60-10 (c) or § 32.65-15 and may be installed "on deck" or "under deck" with the tank protruding above deck. On installations where a portion of the tank extends above the weather deck, provision shall be made to maintain the weather tightness of the deck except that vessels operating on protected inland waters may have tanks located in the holds of hopper type barges without the watertightness of the deck being maintained.

(c) All tanks shall be installed with manhole openings and fittings located above the weather deck.

(d) Tanks shall be mounted on substantial steel saddles and securely fixed in place. Each tank shall be so supported as to prevent the concentration of excessive loads on the supporting portion of the shell.

(e) No strength welding employed in the attachment of supports, lugs, fittings, etc., shall be done on tanks that require and have been stress-relieved, except where specifically allowed by a marine inspector. The method to be employed in stress relieving strength field welds shall be approved by the Commandant.

38.05-15 Cargo tanks on barges—B/ALL. Cargo tanks having a capacity of not more than 60,000 gallons may form part of the structure of a tank barge where adequate provision is made to prevent damage to tanks in the event of collision or grounding. Sides of all tank barges shall be fitted with suitable guards as an added precaution against the cargo tanks becoming damaged as a result of collision.

38.05-20 Lagging—TB/ALL. (a) Lagged tanks shall be covered with an insulation material of a thickness so that the thermal conductance is not more than 0.075 B. T. U. per square foot, per degree Fahrenheit differential in temperature, per hour. The entire insulation above deck shall be covered with a sheet metal jacket efficiently flashed around all openings so as to be weathertight.

(b) Where unlagged tanks are installed in insulated holds or 'tween deck spaces, such tanks shall be considered lagged provided the thermal conductance of the insulation is not more than that required by Paragraph (a) of this section. On installations where part of the tank is installed in insulated holds or 'tween deck spaces, the tank shall be considered lagged provided the exposed part above the weather deck is insulated in accordance with Paragraph (a) of this section.

(c) Where tanks are lagged only nonflammable lagging shall be employed.

38.05-25 Refrigerated systems—TB/ALL. (a) Where a refrigerated system is installed to maintain the temperature of the liquid below atmospheric, the tanks shall be designed for a pressure which shall, at all times, be at least 25 pounds per square inch in excess of the vapor pressure (gage) corresponding to the temperature of the liquid at which the system is maintained.

(b) Auxiliary refrigeration equipment shall be provided, which shall be capable of maintaining the required temperature in the event of failure of the main refrigeration unit.

(c) The tank insulation shall be of sufficient thickness so that the thermal conductance is not more than 0.075 B. T. U. per sq. ft. per degree Fahrenheit differential in temperature per hour. A steel insulation jacket of not less than 0.083″ thickness shall be provided to cover the tank insulation above the weather deck.

SUBPART 38.10—PIPING, VALVES, FITTINGS AND ACCESSORY EQUIPMENT

38.10–1 Valves and accessories—TB/ALL. (a) All shutoff valves and accessory equipment shall be of a type suitable for use with liquefied petroleum gases, and unless otherwise indicated herein, their pressure rating shall be not less than the maximum pressure for which the tank is designed.

(b) All connections to tanks, except safety relief valves and gaging devices, shall have shutoff valves located as close to the tank as practicable.

(c) Excess flow valves where required by these regulations shall close automatically at those rated flows of vapor or liquid as specified by the manufacturer. The piping, including valves, fittings and appurtenances, protected by an excess flow valve, shall have a greater capacity than the rated flow of the excess flow valve.

(d) Liquid level gaging devices which are so constructed that outward flow of tank contents shall not exceed that passed by a No. 54 drill size opening, need not be equipped with excess flow valves.

(e) Pressure gage connections need not be equipped with excess flow valves if the openings are not larger than No. 54 drill size.

(f) Excess flow and back pressure check valves where required by the regulations in this part shall be located on the inside of the tank or outside where the piping enters the tank. In the latter case, installation shall be made in such manner that any undue strain will not cause breakage between the tank and the excess flow or back pressure check valve.

(g) Excess flow valves may be designed with a bypass, not to exceed a No. 60 drill size opening to allow equalization of pressure.

(h) Prior to disconnecting shore lines, the pressure in the liquid and vapor lines shall be relieved to atmosphere through suitable valves installed at the loading header.

(i) Relief valves shall be fitted in liquid lines which may be subject to excessive pressure caused by liquid full condition, and the escape piped to the venting system.

38.10–5 Installation of excess flow valves and back pressure check valves—TB/ALL. (a) Filling connections shall be provided with a combination back pressure check valve and excess flow valve, two back pressure check valves, or a positive shutoff valve in conjunction with either a remote operating back pressure valve or an internal excess flow valve.

(b) All liquid and vapor connections to tanks except safety relief valves, liquid level gaging devices and pressure gages, described in § 38.10–1, shall be equipped with automatic excess flow valves, or in lieu thereof, may be fitted with quick closing stop valves, which, except during filling and discharge operations, shall remain closed. The control mechanism for such valves shall be provided with a secondary control which can be used to close the stop valves in case the liquid or vapor pipe is broken. In addition, such control mechanism shall be provided with a fusible plug, designed to melt between 208° F. and 220° F. which will cause the stop valve to close automatically in case of fire.

(c) Where the filling and discharge are made through a common nozzle at the tank, and the connection is fitted with a quick-closing stop valve as required in Paragraph (b) of this section, the back pressure check valve or excess flow valve is not required, provided, however, a positive shutoff valve is installed in conjunction with the stop valve.

38.10–10 Piping and fittings—TB/ALL. (a) All pipe connections shall be grouped in the smallest practicable space and shall be located near the highest point on the tank.

(b) All valves, fittings, accessories, safety devices, gaging devices, etc., which are directly at-

tached to the tank shall be protected against mechanical damage.

(c) Valves, regulating, gaging, and other tank appurtenances on unmanned barges shall be protected against tampering.

(d) All piping, valves, and fittings shall be designed for a working pressure of not less than the vapor pressure (gage) of the gas at 115° F., or the maximum pressure to which the system may be subjected. In the case of piping on the discharge side of the liquid pumps or vapor compressors, the design pressure shall be not less than the pump or compressor discharge relief valve setting; or, provided the piping is not fitted with relief valves, the design pressure shall not be less than the total discharge head of the pump or compressor.

(e) Piping subject to tank pressure shall be either seamless drawn steel or electric resistance welded steel. All fittings shall be of not less than 300 pounds standard: *Provided*, That, in refrigerated tank systems designed for pressures lower than 150 p. s. i., 150-pound standard may be permitted.

(f) Cast iron shall not be employed in the construction of valves, flanges, or fittings.

(g) Valve seat material, packing, gaskets, etc., shall be resistant to the action of the liquefied petroleum gas in the liquid phase. All flange and manhole cover gasket material shall be non-combustible and capable of withstanding a temperature of 1,000° F. without failure.

(h) Where possible, provision shall be made for expansion and contraction of piping by means of seamless steel pipe expansion bends. Packless type bellows or corrugated expansion joints may be used, provided satisfactory evidence is shown that space limitations do not permit the use of expansion bends. Slip type expansion joints are prohibited.

(i) Piping shall be provided with means of support sufficient to take all the weight of the piping off the valves and fittings and to prevent excessive vibration.

(j) Suitable means shall be provided for controlling the expansion in the piping system.

38.10-15 Safety relief valves—TB/ALL. (a) Each tank shall be fitted with one or more approved safety relief valves designed, constructed and flow-tested for capacity in conformance with Subpart 162.018 of Subchapter Q (Specifications) of this chapter.

(b) Each safety relief valve shall be set to start to discharge at a pressure not in excess of the design pressure of the tank.

(c) The safety relief valves shall have a relieving capacity sufficient to prevent a rise of pressure in the tank of more than 20 percent above the maximum design pressure when all the safety relief valves are blowing. The minimum required rates of discharge of safety relief valves shall not be less than that shown in Table 38.10–15 (c).

TABLE 38.10–15 (c)—MINIMUM REQUIRED RELIEVING CAPACITIES FOR SAFETY RELIEF VALVES

Discharge Measured in Cubic Feet Per Minute of Liquefied Petroleum Gas at 60° F. and Atmospheric Pressure (14.7 p. s. i. absolute)

Tank Size DxU [1]	Minimum Tank Design Pressure, p. s. i.[2]			
	100	150	200	250 [3]
40	2, 725	2, 840	3, 050	3, 250
41	2, 795	2, 910	3, 120	3, 330
42	2, 860	2, 980	3, 200	3, 410
43	2, 930	3, 050	3, 270	3, 490
44	3, 000	3, 120	3, 350	3, 570
45	3, 070	3, 190	3, 420	3, 650
46	3, 140	3, 260	3, 500	3, 730
47	3, 205	3, 340	3, 570	3, 810
48	3, 275	3, 400	3, 650	3, 890
49	3, 340	3, 470	3, 720	3, 970
50	3, 410	3, 550	3, 800	4, 050
51	3, 475	3, 620	3, 880	4, 120
52	3, 545	3, 680	3, 960	4, 200
53	3, 615	3, 760	4, 030	4, 270
54	3, 680	3, 830	4, 100	4, 360
55	3, 750	3, 900	4, 170	4, 430
56	3, 820	3, 970	4, 250	4, 510
57	3, 890	4, 040	4, 320	4, 590
58	3, 955	4, 110	4, 400	4, 670
59	4, 020	4, 180	4, 470	4, 750
60	4, 090	4, 250	4, 540	4, 780
65	4, 430	4, 610	4, 920	5, 220
70	4, 770	4, 960	5, 290	5, 610
75	5, 110	5, 300	5, 650	6, 000
80	5, 450	5, 650	6, 020	6, 390
85	5, 790	6, 000	6, 490	6, 780
90	6, 130	6, 350	6, 700	7, 180
95	6, 470	6, 700	7, 120	7, 570
100	6, 800	7, 050	7, 490	7, 960
105	7, 150	7, 400	7, 760	8, 360
110	7, 500	7, 750	8, 240	8, 740
115	7, 850	8, 120	8, 610	9, 120
120	8, 200	8, 470	8, 980	9, 500
140	9, 550	9, 860	10, 450	11, 020
160	10, 900	11, 260	11, 920	12, 500
180	12, 270	12, 660	13, 400	13, 900
200	12, 810	13, 200	13, 980	14, 480
220	13, 440	13, 740	14, 520	15, 080
240	13, 880	14, 290	15, 100	15, 650
260	14, 420	14, 860	15, 660	16, 230
280	14, 960	15, 400	16, 220	16, 820
300	15, 490	15, 930	16, 800	17, 400
320	16, 020	16, 470	17, 460	17, 990

See footnotes at end of table.

TABLE 38.10–15 (c)—MINIMUM REQUIRED RELIEVING CAPACITIES FOR SAFETY RELIEF VALVES—Continued

Discharge Measured In Cubic Feet Per Minute of Liquefied Petroleum Gas at 60° F. and Atmospheric Pressure (14.7 p. s. i. absolute)

Tank Size DxU [1]	Minimum Tank Design Pressure, p. s. i.[2]			
	100	150	200	250 [3]
340	16, 540	17, 000	17, 920	18, 560
360	17, 080	17, 550	18, 490	19, 150
380	17, 610	18, 100	19, 040	19, 730
400	18, 140	18, 640	19, 600	20, 300
420	18, 690	19, 200	20, 180	20, 900
440	19, 210	19, 760	20, 740	21, 470
460	19, 740	20, 300	21, 300	22, 040
480	20, 290	20, 840	21, 860	22, 620
500	20, 820	21, 390	22, 400	23, 210
520	21, 350	21, 930	22, 900	23, 790
540	21, 880	22, 480	23, 560	24, 380
560	22, 400	23, 030	24, 130	24, 960
580	22, 940	23, 580	24, 690	25, 540
600	23, 470	24, 120	25, 250	26, 120
620 [4]	24, 000	24, 650	25, 800	26, 700
	Air Conversion Factors [5]			
	1. 180	1. 142	1. 078	1. 010

[1] D=outside diameter of tank in feet and fractions thereof. U=over-all length of tank in feet and fractions thereof.
[2] For tank design pressures exceeding the minimum values shown in respective columns, use next higher figure.
[3] On tanks with design pressures exceeding 250 p. s. i. the safety relief valve minimum requirements for 250 p. s. i. design pressure may be used.
[4] For D x U over 620, discharge capacity shall be calculated in direct proportion to preceding values.
[5] To obtain equivalent rates of discharge for air, multiply the discharge rates for liquefied gas petroleum by the factors indicated under each column.

(d) Safety relief valves shall be attached to the tank near the highest point of the vapor space. Shutoff valves shall not be installed between the tanks and safety relief valves, except manifolds for mounting multiple safety relief valves may be fitted with acceptable interlocking shutoff valves so arranged at all times as to permit the required capacity discharge through the open safety relief valves.

38.10–20 Liquid level gaging devices—TB/ALL. (a) Each tank shall be fitted with a liquid level gaging device of approved design to indicate the maximum level to which the tank may be filled with liquid at temperatures between 20° F. and 130° F.

(b) Liquid level gaging devices may be of the following types: rotary tube, slip tube, fixed tube, magnetic, automatic float, or similar types approved by the Commandant.

(c) All gaging devices shall be arranged so that the maximum liquid level for butane, mixtures of butane and propane, or propane, to which the tank may be filled is readily determinable. The maximum gallonage capacity as required by § 38.15–1 shall be marked on the tank, system name plate, or gaging device.

(d) Gaging devices that require bleeding of the product to the atmosphere, such as the rotary tube, fixed tube and slip tube, shall be so designed that the bleed valve maximum opening is not larger than a No. 54 drill size, unless provided with excess flow valve.

(e) Automatic float continuous reading tape gages, and similar types, shall be fitted with a shutoff valve located as close to the tank as practicable, which shall be designed to close automatically in the event of fracture of the external gage piping. An automatic float gage shall always be used in conjunction with a fixed tube device.

(f) Gaging devices shall have a design pressure of at least 250 pounds per square inch.

(g) Length of fixed tube device shall be designed to indicate the maximum level to which the tank may be filled, based on the volume of the product at 40° F. at its maximum permitted filling density for unlagged tanks and at 50° F. for lagged tanks. The maximum volume of the liquid at 60° F. may be obtained by determining the volume of the liquid at 40° F. or 50° F. for unlagged or lagged tanks, using the filling densities given in § 38.15–1 and correcting the liquid volumes at these temperatures to 60° F. by applying the volume correction factors in Table 38.10–20 (g).

(h) The method for calculating length of fixed tubes shall be:

$$\frac{\text{Water Capacity of Container} \times \text{Filling Density}}{\text{Specific Gravity} \times \text{Volume Correction Factor}} = \text{Maximum Volume for which fixed length tube shall be set}$$

TABLE 38.10-20 (g)—VOLUME CORRECTION FACTORS

Specific Gravity	Unlagged tanks	Lagged tanks
0. 500	1. 033	1. 017
. 510	1. 031	1. 016
. 520	1. 029	1. 015
. 530	1. 028	1. 014
. 540	1. 026	1. 013
. 550	1. 025	1. 013
. 560	1. 024	1. 012
. 570	1. 023	1. 011
. 580	1. 021	1. 011
. 590	1. 020	1. 010

(i) Gage glasses of the columnar type are prohibited.

(j) Flat sight glasses may be used in the design of automatic float continuous reading tape gages: *Provided*, That such glasses shall be made of heat-treated, high strength material of not less than ½ inch in thickness and adequately protected by a metal cover.

(k) Each tank shall be provided with a reliable pressure gage and thermometer well. The gage shall be located at the highest practicable point. The thermometer well shall be fitted in the liquid space, connected to the shell by means of screwed or flanged joint, and fitted with a gastight cap.

SUBPART 38.15—SPECIAL CARGO HANDLING REQUIREMENTS

38.15-1 Filling densities — TB/ALL. The "filling density" is defined as the percent ratio of the weight of the gas in a tank to the weight of water the tank will hold at 60° F. The filling densities shall not exceed the ratios indicated in the Table 38.15-1.

NOTE: Increase in filling densities to provide for seasonal changes and refrigeration of cargo may be considered by the Commandant upon presentation of factual evidence that safe operation can be effected.

38.15-5 Cargo hose—TB/ALL. (a) Flexible metal hose fabricated of seamless steel pipe and flexible joints of steel or bronze, or hose fabricated of other suitable material resistant to the action of liquefied petroleum gases shall be fitted to the liquid and vapor lines during filling and discharging of the tanks.

(b) Hose subject to tank pressure shall be designed for a bursting pressure of not less than five times the maximum safety relief valve setting of the tank.

TABLE 38.15-1—MAXIMUM PERMISSIBLE FILLING DENSITIES

Specific gravity at 60° F.	Maximum permitted filling density		
	Unlagged tanks		Lagged tanks
	Water capacity		All capacities
	1,200 gal. and under	Over 1,200 gal.	
0.473–0.480	38	41	42
0.481–0.488	39	42	43
0.489–0.495	40	43	44
0.496–0.503	41	44	45
0.504–0.510	42	45	46
0.511–0.519	43	46	47
0.520–0.527	44	47	48
0.528–0.536	45	48	49
0.537–0.544	46	49	50
0.545–0.552	47	50	51
0.553–0.560	48	51	52
0.561–0.568	49	52	53
0.569–0.576	50	53	54
0.577–0.584	51	54	55
0.585–0.592	52	55	56
0.593–0.600	53	56	57
0.601–0.608	54	57	58
0.609–0.617	55	58	59
0.618–0.626	56	59	60
0.627–0.634	57	60	61

(c) Hose subject to discharge pressure of pumps or vapor compressors shall be designed for a bursting pressure of not less than five times the pressure setting of the pump or compressor relief valve.

(d) Before being placed in service each new cargo hose, with all necessary fittings attached, shall be tested hydrostatically by the manufacturer to a pressure of not less than twice the maximum pressure to which it may be subjected. The hose shall be marked with the maximum pressure guaranteed by the manufacturer.

38.15-10 Electrical bonding—TB/ALL. The tank vessel shall be electrically connected to the shore piping prior to connecting the cargo hose. This electrical connection shall be maintained until after the cargo hose has been disconnected and any spillage has been removed.

SUBPART 38.20—VENTING AND VENTILATION

38.20-1 Venting—T/ALL. (a) Each safety relief valve installed on a cargo tank shall be connected to a branch vent of a venting system which shall be constructed so that the discharge of gas will be directed vertically upward to a point at

least 10 feet above the weather deck or the top of any tank or house located above the weather deck.

(b) The capacity of branch vents or vent headers shall depend upon the number of cargo tanks connected to such branch or header, as provided for in the Table 38.20-1 (b), and upon the total safety relief valve discharge capacity.

TABLE 38.20-1 (b)—CAPACITY OF BRANCH VENTS OR VENT HEADERS

Number of cargo tanks	Percent of total valve discharge
1 or 2	100
3	90
4	80
5	70
6 or more	60

(c) In addition to the requirements specified in paragraphs (a) and (b) of this section, the size of the branch vents or vent headers shall be such that the back pressure in the relief valve discharge lines shall not be more than 10 percent of the safety relief valve setting.

(d) Return bends and restrictive pipe fittings are not permitted.

(e) Vents and headers shall be so installed as to prevent excessive stresses on safety relief valve mountings.

(f) The vent discharge riser shall be so located as to provide protection against mechanical injury and such discharge pipes shall be fitted with loose raincaps or other suitable means to prevent entrance of rain or snow.

(g) No valve of any type shall be fitted in the vent pipe between the safety relief valve and the vent outlets.

(h) Suitable provision shall be made for draining condensate which may accumulate in the discharge pipe.

38.20-5 Venting—B/ALL. (a) Safety relief valves on cargo tanks in barges may be connected to individual or common risers which shall extend to a reasonable height above the deck. An alternate arrangement consisting of a branch vent header system as required by § 38.20-1 may be installed. In any case, the provisions of § 38.20-1 (d) through (h) shall apply.

(b) Arrangement specially provided for venting cargo tanks forming a part of the hull on unmanned barges will be considered by the Commandant upon presentation of plans.

SUBPART 38.25—PERIODIC INSPECTIONS AND TESTS

38.25-1 Periodic inspections—TB/ALL. Each tank shall be subjected to an internal examination biennially at the annual inspection period. Each lagged tank shall be subjected to an external inspection at least once every 8 years by having jacket and lagging removed.

38.25-5 Hydrostatic tests—TB/ALL. Each tank shall be subjected to a hydrostatic test at the annual inspection period on the eighth year of the installation, and a like test shall be applied every fourth year thereafter. The hydrostatic test shall be equal to one and one-half times the allowable pressure as determined by the safety relief valve setting. If the jacket and lagging are not removed during the internal hydrostatic tests prescribed in this subpart, the tank shall hold the hydrostatic pressure for at least 20 minutes without pressure drop.

38.25-10 Removal of defective tanks—TB/ALL. If a tank fails to pass the tests prescribed in this subpart, it shall be removed from service unless otherwise authorized by the Commandant.

38.25-15 Safety valves—TB/ALL. The safety relief valve discs shall be lifted from their seats in the presence of an inspector by either liquid, gas, or vapor pressure at least once every four years to determine the accuracy of adjustment and, if necessary, shall be reset.

PART 39—INFLAMMABLE OR COMBUSTIBLE LIQUIDS HAVING LETHAL CHARACTERISTICS

SUBPART 39.01—GENERAL

Sec.
39.01–1 Scope of regulations—TB/ALL.
39.01–5 Certificate of inspection—TB/ALL.

SUBPART 39.05—DESIGN AND INSTALLATION OF CARGO TANKS

39.05–1 Design and construction—TB/ALL.
39.05–5 Markings—TB/ALL.
39.05–10 Installation—TB/ALL.

SUBPART 39.10—PIPING, VALVES, FITTINGS AND ACCESSORY EQUIPMENT

39.10–1 Valves and accessories—TB/ALL.
39.10–5 Piping and fittings—TB/ALL.
39.10–10 Safety relief valves—TB/ALL.
39.10–15 Gaging devices—TB/ALL.

SUBPART 39.15—SPECIAL CARGO HANDLING REQUIREMENTS

39.15–1 Warning sign at gangway—TB/ALL.

SUBPART 39.20—VENTING AND VENTILATION

39.20–1 Venting—TB/ALL.

SUBPART 39.25—PERIODIC INSPECTIONS AND TESTS

39.25–1 Periodic inspections—TB/ALL.
39.25–5 Hydrostatic tests—TB/ALL.
39.25–10 Removal of defective tanks—TB/ALL.
39.25–15 Safety valves—TB/ALL.

AUTHORITY: Sections 39.01–1 to 39.25–15, inclusive, issued under R. S. 4405 and 4417a, as amended, and Section 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 1, 375, 391a, 50 U. S. C. 1275; E. O. 10402, 17 F. R. 9917.

SUBPART 39.01—GENERAL

Section 39.01–1 Scope of regulations—TB/ALL. The regulations in this part contain requirements for the transportation in fixed independent tanks of inflammable or combustible liquids having lethal characteristics and defined as Class "B" or "C" poisons in §§ 146.25–3 and 146.25–5 of Part 146 of Subchapter N (Explosives or Other Dangerous Articles on Board Vessels) of this chapter. The regulations covering the transportation in portable tanks of inflammable or combustible liquids having lethal characteristics and defined as Class "B" or "C" poisons are contained in Part 146 of Subchapter N (Explosives or Other Dangerous Articles on Board Vessels) of this chapter.

39.01–5 Certificate of inspection—TB/ALL. (a) Certificate of inspection shall be endorsed for the carriage of Class "B" or "C" poisonous liquids as follows:

> Inspected and approved for the carriage of inflammable or combustible Class "B" or "C" poisonous liquids having vapor pressure not exceeding — lbs. per square inch gage at 115° F.

SUBPART 39.05—DESIGN AND INSTALLATION OF CARGO TANKS

39.05–1 Design and construction—TB/ALL. (a) Cargo tanks shall meet the requirements for Class II or Class III arc welded unfired pressure vessels, fabricated, inspected, and tested in accordance with the applicable requirements of Parts 50 to 57, inclusive, of Subchapter F (Marine Engineering) of this chapter, except as provided otherwise in this part.

(b) Each cargo tank shall be designed for a pressure of not less than the vapor pressure, in pounds per square inch gage, of the lading at 115° F., but for not less than 30 pounds per square inch. Where the vapor pressure of the lading at 115° F. exceeds 30 pounds per square inch gage the requirements for Class II pressure vessels will apply.

(c) The shell and head thickness of any tank shall not be less than $\frac{5}{16}$ inch. Dished heads shall be used in construction.

(d) Each tank shall be provided with a 15-inch by 18-inch or an 18-inch diameter minimum manhole, fitted with a cover located as close to the top of the tank as possible. Where access trunks or necks are fitted to tanks the diameter of the trunks or necks shall be 30 inches minimum.

39.05–5 Markings—TB/ALL. (a) Upon satisfactory completion of tests and inspection, the inspector shall require the following marking at least $\frac{3}{8}$ inch high, to be stamped on the tank or on a nonferrous plate which shall be permanently

attached to the tank by means of welding or brazing, using high melting point brazing metal:

Name and address of manufacturer

---- p. s. i.
Design pressure

---- p. s. i.
Shop test pressure

Inspector's No., Initials, and C. G. symbol

Mfrs.' Serial No.

Date of manufacture

---- U. S. gallons
Total capacity

(b) In addition to the aforementioned markings, the following inscription shall be stamped on the tank, or a corrosion-resistant plate containing this data shall be securely attached thereto:

"This tank shall not contain a product having a vapor pressure in excess of ____ p. s. i. gage at 115° F."

(c) All tank markings shall be permanently and legibly stamped in a readily visible position, and shall not be obscured by painting.

39.05–10 Installation—TB/ALL. (a) Cargo tanks shall be independent of the hull and installed with a clearance of not less than 24 inches from the vessel's sides. A working space of not less than 15 inches shall be provided around and beneath each tank, or else provision shall be made for moving such tank to secure adequate space for inspection and maintenance of the vessel's structure and the tank.

(b) Tanks shall be mounted on substantial steel saddles and securely fixed in place. Each tank shall be so supported as to minimize the concentration of excessive loads on the supporting portion of the shell.

(c) Tanks may be located in dry cargo holds or in other cargo tanks meeting the requirements for cofferdams as prescribed in § 32.60–10 (c) or 32.65–15, and may be installed "on deck" or "under deck" with the tank protruding above deck. On installations where a portion of the tank extends above the weather deck, provision shall be made to maintain the watertightness of the deck except that vessels operating on protected inland waters may have tanks located in the holds of hopper type barges without the watertightness of the deck being maintained.

(d) All tanks shall be installed with manhole openings and fittings located above the weather deck.

(e) No strength welding employed in the attachment of supports, lugs, fittings, etc., shall be done on tanks that require and have been stress-relieved, except where specifically allowed by a marine inspector. The method to be employed in stress relieving strength field welds shall be approved by the Commandant.

SUBPART 39.10—PIPING, VALVES, FITTINGS, AND ACCESSORY EQUIPMENT

39.10–1 Valves and accessories—TB/ALL. (a) All shutoff valves and accessory equipment shall be of types suitable for use with the liquid cargo to be carried, and their pressure rating shall be not less than 150 p. s. i. Cast iron shall not be employed in the construction of valves, flanges, or fittings.

(b) All connections to cargo tanks, except safety relief valves, shall have shutoff valves located as close to the tank as practicable.

39.10–5 Piping and fittings—TB/ALL. (a) Piping shall be suitable for use with the liquid cargo to be carried and shall conform to the requirements of Part 55, Subchapter F (Marine Engineering) of this chapter. Piping shall be of seamless drawn material, except that electric resistance-welded steel piping will be acceptable.

(b) All pipe connections to the tank shall be grouped in the smallest practicable space and shall be located near the highest point on the tank. Alternate arrangements for piping installation may be submitted for consideration by the Commandant.

(c) Where possible provision shall be made for expansion and contraction of piping by means of seamless steel pipe expansion bends. Packless bellows or corrugated expansion joints may be used, provided satisfactory evidence is shown that space limitations do not permit the use of expansion bends. Slip type expansion joints are prohibited.

39.10–10 Safety relief valves — TB/ALL. (a) Each tank shall be fitted with one or more safety relief valves.

(b) Each safety relief valve shall be set to start to discharge at a pressure not in excess of the design pressure of the tank. The total relieving capacity of the safety relief valves shall be sufficient to prevent a rise of pressure in the tank of more than 20 percent above the maximum design pressure.

(c) Relief valves shall be attached to the tank near the highest point of the vapor space.

39.10-15 Gaging devices—TB/ALL. A closed gaging system for determining the level of the liquid in the cargo tank shall be provided.

SUBPART 39.15—SPECIAL CARGO HANDLING REQUIREMENTS

39.15-1 Warning sign at gangway—TB/ALL. When transferring bulk cargo a warning sign as provided in Paragraph 35.30-1 (b) shall be displayed to warn persons on board or in the vicinity of the tanks.

SUBPART 39.20—VENTING AND VENTILATION

39.20-1 Venting—TB/ALL. Vent pipes shall be connected to each safety relief valve. The vent pipes may be connected to a vent header system or each tank may be vented independently. The vent riser shall extend to a height above the weather deck equal to at least one-third the beam of the vessel and shall terminate at a comparable distance from any other living or working space, ventilator inlet, or source of vapor ignition. When special conditions prevent the vent outlets from being permanently installed at a height above the deck of one-third the beam of the vessel, an adjustable system shall be provided which, when extended vertically, shall reach a height of one-third the beam of the vessel. The safety relief valve shall be fitted with a bypass having the full capacity of the relief valve and equipped with a manually operated stop valve to permit equalizing pressures during filling and discharging operations.

SUBPART 39.25—PERIODIC INSPECTIONS AND TESTS

39.25-1 Periodic inspections—TB/ALL. Each tank shall be subjected to an internal examination biennially at the annual inspection period. Each lagged tank shall be subjected to an external inspection at least once every eight years by having jacket and lagging removed.

39.25-5 Hydrostatic tests—TB/ALL. Each tank shall be subjected to a hydrostatic test at the annual inspection period on the eighth year after installation, and a like test shall be applied every fourth year thereafter. The hydrostatic test shall be equal to one and one-half times the design pressure. At hydrostatic tests at intermediate periods where jacket and lagging are not removed, the tank shall hold the hydrostatic pressure for at least 20 minutes without pressure drop.

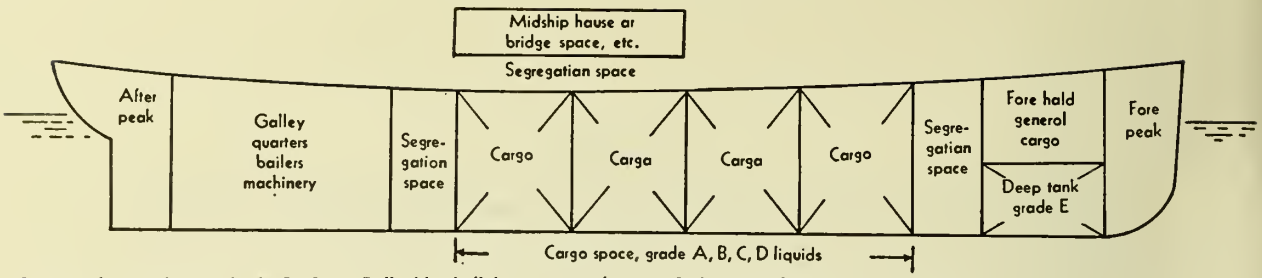
39.25-10 Removal of defective tanks—TB/ALL. If a tank fails to pass the tests prescribed in this subpart, it shall be removed from service unless otherwise authorized by the Commandant.

39.25-15 Safety valves—TB/ALL. The safety relief valve discs shall be lifted from their seats in the presence of an inspector by either liquid, gas, or vapor pressure at least once every four years to determine accuracy of adjustment and, if necessary, shall be reset.

APPENDIX

COAST GUARD DISTRICT COMMANDERS AND MERCHANT MARINE ACTIVITIES

District	Title	City	State	Address
1st	Commander, 1st Coast Guard District	Boston	Massachusetts	1400 Customhouse.
	Marine Inspection Officer	do	do	1400 Customhouse.
	Officer in Charge, Marine Inspection	do	do	447 Commercial St.
	do	Portland	Maine	76 Pearl St.
	do	Providence	Rhode Island	409 Federal Bldg.
2d	Commander, 2d Coast Guard District	St. Louis	Missouri	224 Old Customhouse, 8th and Olive Sts.
	Marine Inspection Officer	do	do	222 Old Customhouse, 8th and Olive Sts.
	Officer in Charge, Marine Inspection	do	do	216 Old Customhouse, 8th and Olive Sts.
	do	Cairo	Illinois	425–427 Post Office Bldg.
	do	Dubuque	Iowa	339 Post Office and Courthouse Bldg.
	do	Cincinnati	Ohio	748 Federal Bldg., 5th and Main Sts.
	do	Louisville	Kentucky	602 Federal Bldg.
	do	Memphis	Tennessee	322 Customhouse.
	do	Nashville	do	670 U. S. Court House, 801 Broadway.
	do	Pittsburgh	Pennsylvania	1215 Park Bldg.
	do	Huntington	West Virginia	724 4th Ave. Lecco Bldg.
3d	Commander, 3d Coast Guard District	New York	New York	80 Lafayette St.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	Do.
	do	New London	Connecticut	302 New Post Office Bldg.
	do	Albany	New York	313 Federal Bldg.
	do	Philadelphia	Pennsylvania	801 Customhouse, 2d and Chestnut Sts.
5th	Commander, 5th Coast Guard District	Norfolk	Virginia	Box 540, Post Office Bldg.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	204 Customhouse.
	do	Baltimore	Maryland	209 Chamber of Commerce Bldg.
7th	Commander, 7th Coast Guard District	Miami	Florida	Pan American Bank Bldg., 150 S. E. 3rd Ave.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	Do.
	do	Tampa	do	406 Federal Bldg.
	do	Charleston	South Carolina	32 Customhouse.
	do	Savannah	Georgia	205 Customhouse.
	do	Jacksonville	Florida	210 Federal Bldg.
	do	San Juan	Puerto Rico	Room 302, Federal Bldg., P. O. Box 3666
8th	Commander, 8th Coast Guard District	New Orleans	Louisiana	P. O. Box 282.
	Marine Inspection Officer	do	do	313 Customhouse.
	Officer in Charge, Marine Inspection	do	do	311 Customhouse.
	do	Mobile	Alabama	P. O. Box 1535, Federal Bldg.
	do	Port Arthur	Texas	P. O. Box 110, 1601 Procter St.
	do	Galveston	do	P. O. Box 1108, 232 Customhouse.
	do	Corpus Christi	do	919 Jones Bldg.
	do	Houston	do	7300 Wingate Ave.
9th	Commander, 9th Coast Guard District	Cleveland	Ohio	1700 B. F. Keith Bldg.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	1600 B. F. Keith Bldg.
	do	Buffalo	New York	440 Federal Bldg.
	do	Oswego	do	205 Federal Bldg.
	do	Detroit	Michigan	430 Federal Bldg.
	do	Duluth	Minnesota	311 Federal Bldg.
	do	Toledo	Ohio	Veteran's Bldg. 501 Huron St.
	do	Saint Ignace	Michigan	Municipal Bldg.
	do	Chicago	Illinois	1104 Customhouse, 610 S. Canal St.
	do	Ludington	Michigan	National Bank Bldg.
	do	Milwaukee	Wisconsin	533 Federal Bldg
11th	Commander, 11th Coast Guard District	Long Beach	California	706 Times Bldg.
	Marine Inspection Officer	do	do	1126 Times Bldg.
	Officer in Charge, Marine Inspection	do	do	Do.
12th	Commander, 12th Coast Guard District	San Francisco	California	941 K. U. S. Appraisers Bldg., 630 Sansome St.
	Marine Inspection Officer	do	do	907 J. U. S. Appraisers Bldg.
	Officer in Charge, Marine Inspection	do	do	227 J. U. S. Appraisers Bldg.
13th	Commander, 13th Coast Guard District	Seattle	Washington	618 2d Ave.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	Do.
	do	Portland	Oregon	Room 202, Lincoln Bldg., 208 S. W. 5th Ave.
14th	Commander, 14th Coast Guard District	Honolulu	Territory of Hawaii	P. O. Box 2987, 1330 S. Bretania.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	Do.
17th	Commander, 17th Coast Guard District	Juneau	Alaska	P. O. Box 2631, Community Bldg.
	Marine Inspection Officer	do	do	Do.
	Officer in Charge, Marine Inspection	do	do	Do.



Cargo tanks carrying grade A, B, C, or D liquids shall be segregated from the following spaces:

1. Galleys.
2. Living quarters.
3. General cargo spaces.
4. Boiler rooms.
5. Enclosed spaces containing propelling machinery or other machinery normally a source of vapor ignition.

For the purposes of this rule, the following are considered segregating spaces:

1. Cofferdams.
2. Pump rooms.
3. Empty tanks.
4. Tanks containing grade E liquids.

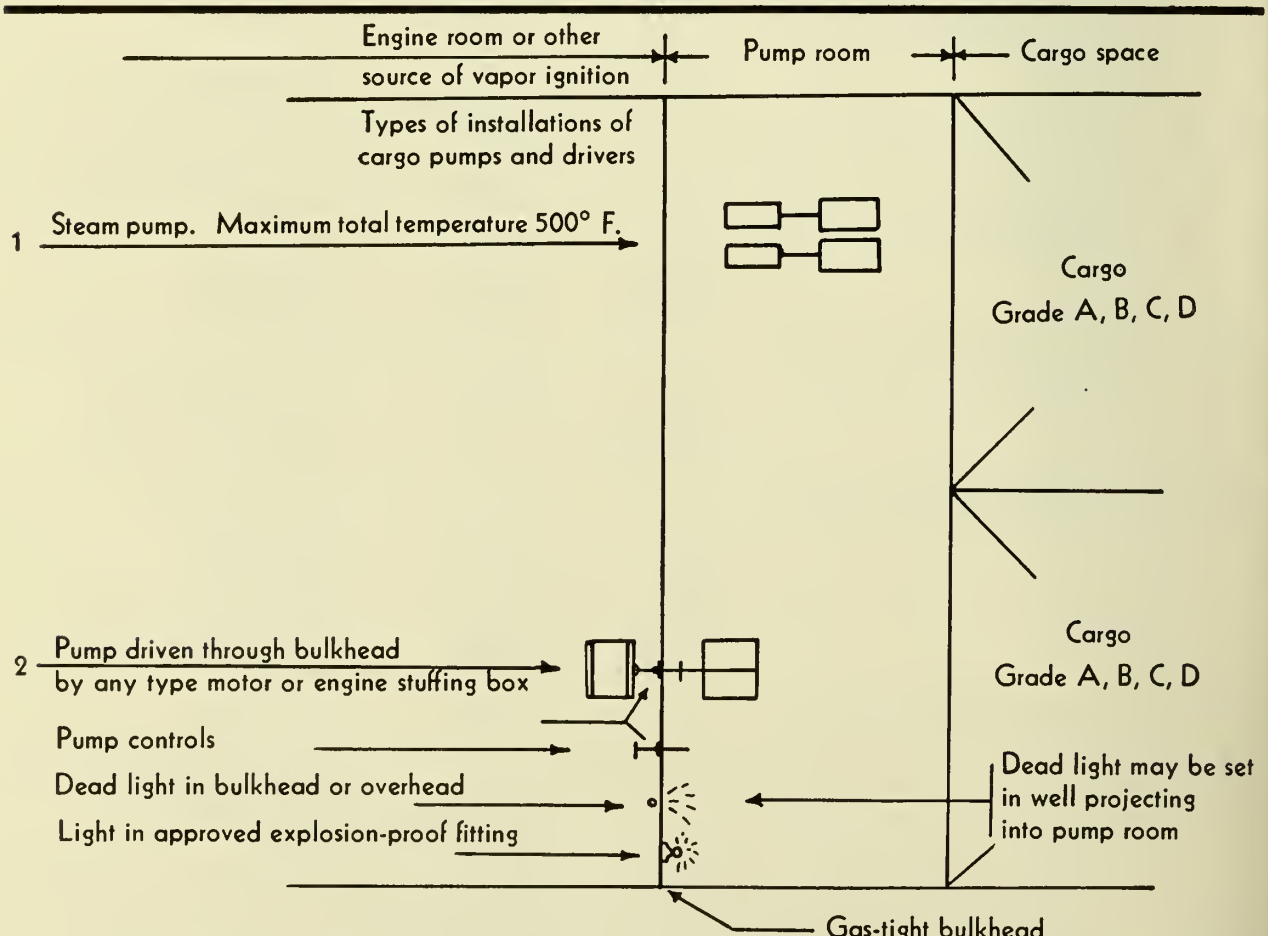
Segregation spaces may be vertical or horizontal.

Segregation for steel tank vessels contracted for prior to November 10, 1936, when carrying grade A, B, or C liquids, shall meet requirements for tank vessels constructed between November 10, 1936, and July 1, 1951, regarding vertical segregation spaces with the following exceptions:

1. No segregation is required between fore hold and cargo space.
2. No segregation is required between cargo space and pump engine room meeting specifications of rule.

No horizontal segregation space is required between deck house and cargo space.

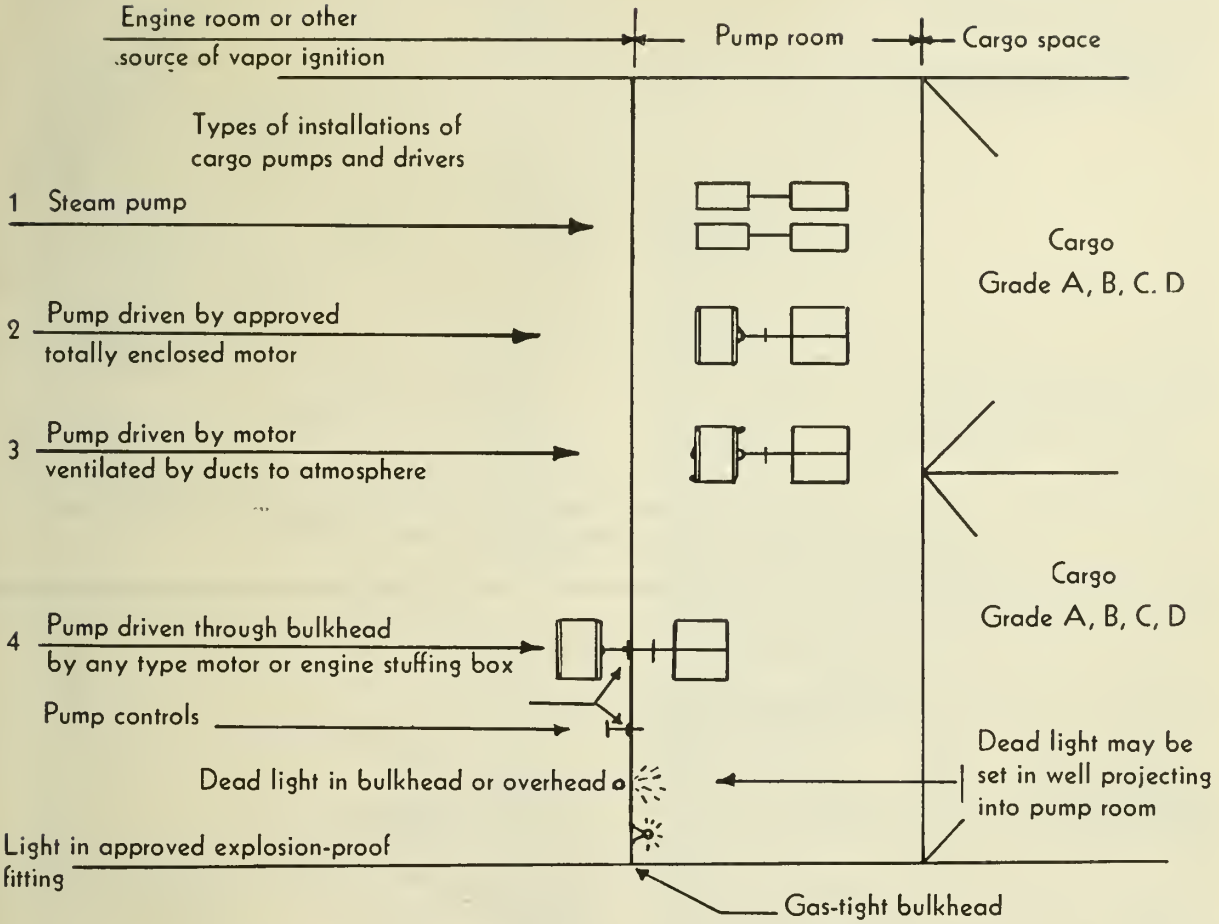
U. S. Coast Guard Drawing No. 1.—Illustrating Sections 32.60–10, 32.65–15, and 32.70–10; Segregation of cargo on steel tank vessels (revised February 1951).


Engine room or other source of vapor ignition
Pump room
Cargo space
Types of installations of cargo pumps and drivers
1 Steam pump. Maximum total temperature 500° F.
Cargo
Grade A, B, C, D
2 Pump driven through bulkhead by any type motor or engine stuffing box
Pump controls
Dead light in bulkhead or overhead
Light in approved explosion-proof fitting
Cargo
Grade A, B, C, D
Dead light may be set in well projecting into pump room
Gas-tight bulkhead

1. Steam pumps where maximum total temperature does not exceed 500° F. are not considered sources of vapor ignition.

2. Any other type of driver must be separated from pump room by gas-tight bulkhead as shown in No. 2.

U. S. Coast Guard Drawing No. 2.—Illustrating Section 32.60–20; Pump rooms for new tank vessels constructed on or after July 1, 1951 (February 1951).

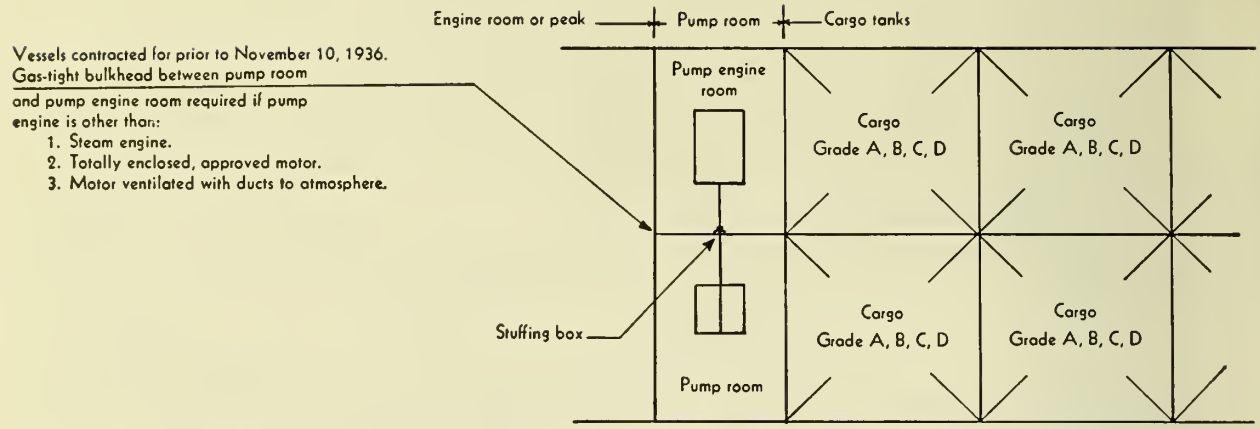


Types 1, 2, ond 3 are not considered sources of vopor ignition and moy be instolled in pump room.

Any other type of driver must be seporoted from pump room by gos-tight bulkhead os shown in Drowing No. 4.

For steel tonk vessels controcted for prior to November 10, 1936, see exception in Section 32.70–20, illustroted in Drowing No. 4. For electric instollotions see exception in Section 32.70–15 (b).

U. S. Coast Guard Drawing No. 3.—Illustrating Section 32.65–20; Pump rooms for tank vessels constructed prior to July 1, 1951 (February 1951).

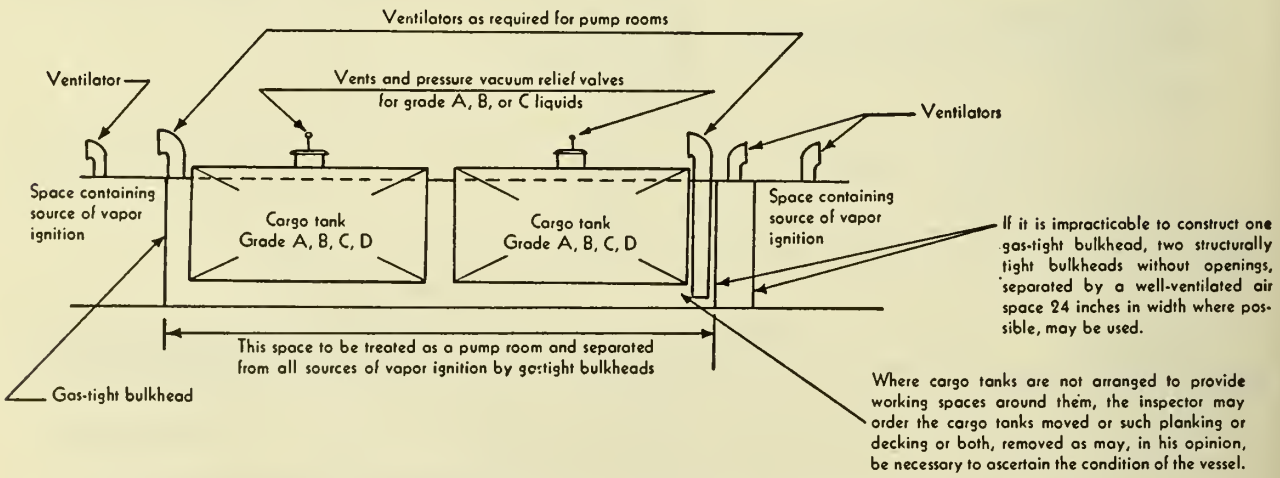

Engine room or peak
Pump room
Cargo tanks
Vessels contracted for prior to November 10, 1936.
Gas-tight bulkhead between pump room
and pump engine room required if pump
engine is other than:
1. Steam engine.
2. Totally enclosed, approved motor.
3. Motor ventilated with ducts to atmosphere.
Pump engine room
Cargo Grade A, B, C, D
Cargo Grade A, B, C, D
Stuffing box
Cargo Grade A, B, C, D
Cargo Grade A, B, C, D
Pump room

On steel tank vessels contracted for prior to November 10, 1936, no cofferdam is required between cargo tanks and pump engine room if either of the following 2 conditions is satisfied:

1. Pump engine not source of vapor ignition. See drawing 3.
2. Protection against vapor ignition provided by meeting all the following requirements:

(A) Pump engine used exclusively for pumping operations.
(B) Pump engine room contains no cargo valves.
(C) Pump engine room well ventilated.
(D) Pump engine exhausts within room completely waterjacketed or insulated.
(E) Gasoline engine intakes fitted with flame arresters.

U. S. Coast Guard Drawing No. 4.—Illustrating Sections 32.70–15 and 32.70–20; Pump engine rooms for steel tank vessels constructed prior to November 10, 1936 (February 1951).


Ventilators as required for pump rooms
Ventilator
Vents and pressure vacuum relief valves
for grade A, B, or C liquids
Ventilators
Space containing source of vapor ignition
Cargo tank Grade A, B, C, D
Cargo tank Grade A, B, C, D
Space containing source of vapor ignition
If it is impracticable to construct one gas-tight bulkhead, two structurally tight bulkheads without openings, separated by a well-ventilated air space 24 inches in width where possible, may be used.
This space to be treated as a pump room and separated from all sources of vapor ignition by gas-tight bulkheads
Gas-tight bulkhead
Where cargo tanks are not arranged to provide working spaces around them, the inspector may order the cargo tanks moved or such planking or decking or both, removed as may, in his opinion, be necessary to ascertain the condition of the vessel.

U. S. Coast Guard Drawing No. 5.—Illustrating Sections 32.75–10 and 32.75–20; Hold spaces and bulkheads for wood hull tank vessels (February 1951).

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